JANUARY, 1955

PRODUCTS finishing

Corrosion Resistant Coatings....Page 24
Plating on Magnesium .....Page 40
Plating Atomic Reactor Metals...Page 48
Electrostatic Paint Finishing ....Page 68

Finishes on *Metal* Products

34¢ per part may be economical!

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You may be looking at cleaning department costs and saying: "that looks about right . . . it used to cost us a lot more!" Would you like to know, for sure, that your cleaning costs are just as low as they can be . . . with excellent results?

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JANUARY, 1955

Page No.	Name of Manufacturer	Page No.	Name of Manufacturer

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CITY_____ ZONE____ STATE_____

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Your Monthly Source For Finishing Ideas

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431 MAIN STREET

CINCINNATI 2,

OHIO

Are you looking for better methods for stripping paint?

WHAT'S THE BEST WAY TO STRIP METAL PARTS IN LARGE VOLUME?
See page 9

Do some finishes resist your present stripping methods? Do rejects pile up and cause a bottleneck in your production line? Do you have trouble stripping vertical surfaces of large products?

Oakite's FREE booklet on "How to STRIP PAINT" will help you find more efficient procedures. You'll want to read more about:

¶ What's the best way to strip paint from metal parts too large to be soaked in tanks? ***See page 3.***

¶ What's the best way to strip large areas of structural metal where a steam supply is available? ***See page 5.*** Where steam is not available? ***See page 7.***

¶ What are the best ways to prepare stripped metal for repainting? ***See page 11.***

¶ What strippers are best for removing oil-base paints? . . . Synthetic enamels, alkali-resistant plastics or resin-based paints? . . . Japans, wrinkle finishes, nitrocellulose lacquers, alkyds, phenolics and ureas? ***See page 12.***

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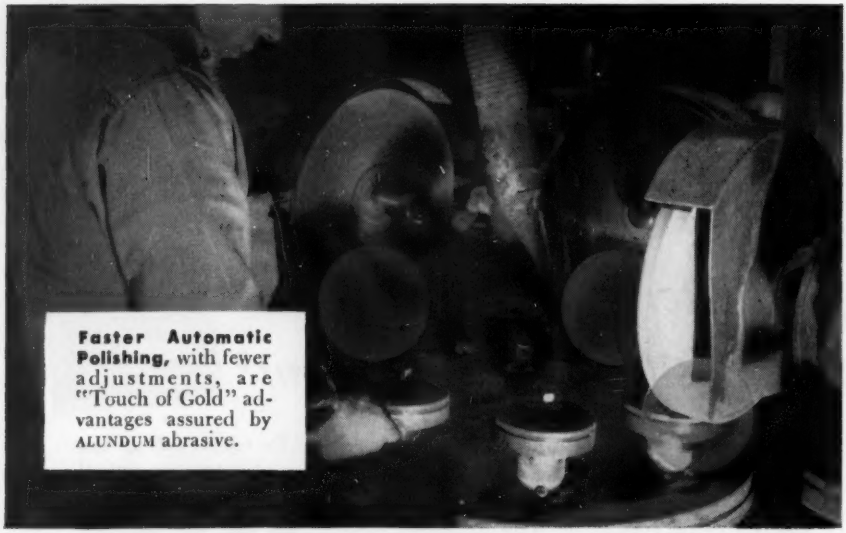

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. . . with ALUNDUM* abrasive on your set-up wheels

Here are two big advantages of Norton ALUNDUM polishing abrasive:

Uniformity. ALUNDUM abrasive grains are uniform in size, structure and chemical composition. No oversize grains to mar surfaces — no undersized grains that loaf on the job. Instead, a full quota of tough, sharp, equal-sized grains — each one doing its share of fast-cutting, uniform polishing.

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In Your Automatic Polishing these advantages are particularly important. With each ALUNDUM grain working equally hard, and each one tightly fixed to the wheel, you get top-quality polishing with minimum adjusting. That's the product-improving, time-saving "TOUCH OF GOLD" that will build *your* profits on *every* polishing job.

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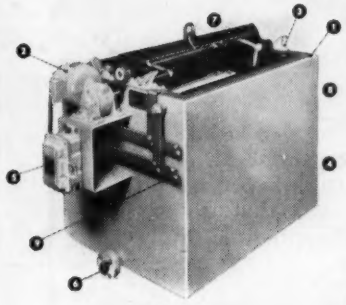
Mercil-Type Plating Tank *with* Submerged Cylinder

plates faster • reduces maintenance cost • permits larger loads

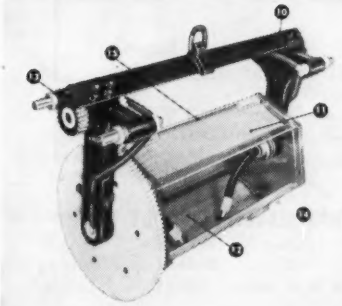


by combining *all* these features for better barrel plating:

1. **TURNED-IN FLANGES**—save space, provide enclosure for hanging heating and cooling coils.
2. **RELOCATED, MORE COMPACT MOTOR DRIVE**—drive shaft *now* above solution level, preventing leakage through shaft openings in tank walls.
3. **REDESIGNED SADDLES**—make barrel positioning far easier.
4. **NO OVERFLOW TROUGH**—not essential with this improved design, saves space inside tank.
5. **PUSH-BUTTON TYPE MOTOR STARTER**
6. **BOTTOM DRAIN**
7. **COIL RISERS**—extending over top of tank.
8. **ANODE RODS**—2 for each cylinder on both single and multiple units.
9. **BUS BARS**—positive and negative on *each* end of tank for equal current distribution.

These *improved* tanks are constructed of ¼" double-welded steel plate in 2 sizes, 14" x 30" I. D. (224 gal.) and 14" x 36" I. D. (252 gal.). For acid solutions, tanks are lined with ⅛" vulcanized rubber or plasticized PVC. For cyanide solutions, rough-wire glass is used in back of anodes. Finish is rust-resistant grey enamel with black trim.

TOGETHER, *They Form the Ideal Combination for Better Barrel Plating!*



10. **IMPROVED HANGER ASSEMBLY**—now made of rigid angle-iron, improved to insure proper barrel alignment.
11. **ONE-PIECE PANELS**—Plexiglas: ½" thick, no ribs. Melamine: ¼" thick, ribbed.
12. **CONVEX TUMBLING SURFACES (Plexiglas only)**—for added strength, easier tumbling action.
13. **MELAMINE BUSHINGS**—for insulating bronze hanger pins.
14. **EASY LOADING & UNLOADING**—cover with handle in panel area is easily reached at all times.
15. **SECURE BONDING**—all molded parts firmly bonded with cement and monel screws.

These *improved* cylinders are available in either Plexiglas, for temp. to 180°F., or Melamine, for temp. of 200-210°F. (Melamine has excellent resistance to abrasion). Hexagonal in shape, with 1" thick heads and special convex (Plexiglas only) one-piece panels, they are designed for greatly reduced maintenance cost and engineered for use *completely submerged* . . . with outstanding results: more consistent plating, 20% higher load capacities, 25% faster plating. And, in zinc baths, total submersion minimizes chance of spark igniting gas above bath.

For complete information on improved H-VW-M Mercil-Type Tanks and Cylinders ask for Bulletin PB 109.

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Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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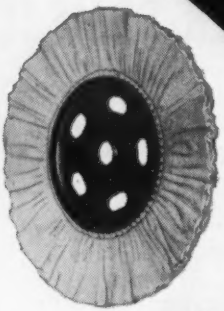

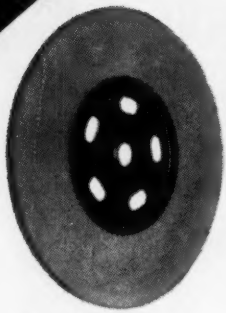

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These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

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You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

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UDYLITE ANNOUNCES

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MADE OF TEMPRON HARD RUBBER

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1. Withstands, *even under load,* the highest temperatures used in plating.

2. Withstands stronger acids.

3. Has greater resistance to abrasion.

4. Can be used effectively through the entire plating cycle.

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After months of research and testing in actual production, Udylite is proud to present a new plating barrel made of Tempron hard rubber with greater efficiency and longer life than ever before offered in plating barrels.

Users of horizontal plating barrels have for years desired a cylinder made of such a material that would withstand the highest plating temperatures. Other requirements called for a high chemical resistance to a wide variety of corrosive solutions, strength to handle heavy loads and economy of a material that would perform satisfactorily through the complete cycle of operations.

Such a material was found in Tempron hard rubber. It resists most inorganic chemicals and it also has good resistance to many organic chemicals which attack hard rubber, soft rubber and plastics.

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Udylite Tempron cylinders are so designed that they can replace existing types of cylinders in Udylite Barrel equipment. Udylite Tempron barrel cylinders are available in 24", 30", 36" and 42" lengths, all with 14" diameters, and the Udylite standard wide selection of perforation sizes.

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CHEMICAL	Conc. %	Ace Tempron 77°F.	158°F.	212°F.	CHEMICAL	Conc. %	Ace Tempron 77°F.	158°F.	212°F.
INORGANIC					**ORGANIC (cont'd)**				
Hydrochloric Acid	38	S	S	S	Pyridine	100	L	—	—
Sulphuric Acid	50	S	S	S	Gasoline	100	S	—	—
Phosphoric Acid	85	S	S	S	Ethyl Acetate	100	S	—	—
Hydrofluoric Acid	50	L	L	—	Diethyl Ether	100	S	—	—
Nitric Acid	20	—	X	X	Hexane	100	S	S	—
Sodium Hydroxide	20	S	S	S	Benzene	100	S	—	—
Ammonium Hydroxide	28	S	—	—	Toluene	100	S	—	—
Sodium Chloride (Brine)	Sat.	S	S	S	Carbon Tetrachloride	100	S	—	—
Ferric Chloride	Sat.	S	S	S	Ethylene Dichloride	100	L	—	—
Stannous Chloride	Sat.	S	S	S	Chlorobenzene	100	S	—	—
					Acetone	100	S	—	—
ORGANIC					Methyl Ethyl Ketone	100	S	—	—
Acetic Acid	98	S	S	L	Carbon Disulfide	100	L	—	—
Ethylene Glycol	100	S	S	S	Acrylonitrile	100	S	—	—
Formaldehyde	100	S	S	S	Nitrobenzene	100	S	—	—
Benzaldehyde	100	S	X	X	Phenol	10	S	L	—
Aniline	100	S	S	S	Oxalic Acid	100	S	—	—

CODE: S—Satisfactory L—Satisfactory, limited service X—Not recommended

If you are interested in receiving a sample of Tempron hard rubber for a test in your solutions, send your request today to—

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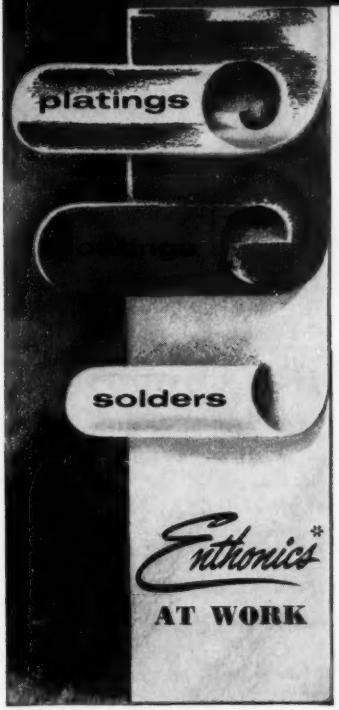

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STEEL	NICKEL • COPPER • SILVER • ZINC • CADMIUM	**ENSTRIP "S"** — additive for sodium cyanide solutions. **ENSTRIP "A"** — prepared compound containing sodium cyanide. **ENSTRIP "103"** — alkaline electrolytic stripper without cyanide.
COPPER • STEEL	TIN-LEAD COATINGS	**ENSTRIP "TL"** — speedy alkaline stripper.
ALUMINUM • COPPER • STEEL	HEAVY CHROMIUM COATINGS	**ENSTRIP "CR-5"** — rapid acid-type stripper.
COPPER ALLOYS	NICKEL • TIN ZINC • LEAD CADMIUM	**ENSTRIP "165-S"** — additive for acid solutions.
ZINC DIE CASTINGS	CHROMIUM • NICKEL • COPPER	**ENSTRIP "L-88"** — acid electrolytic stripper.
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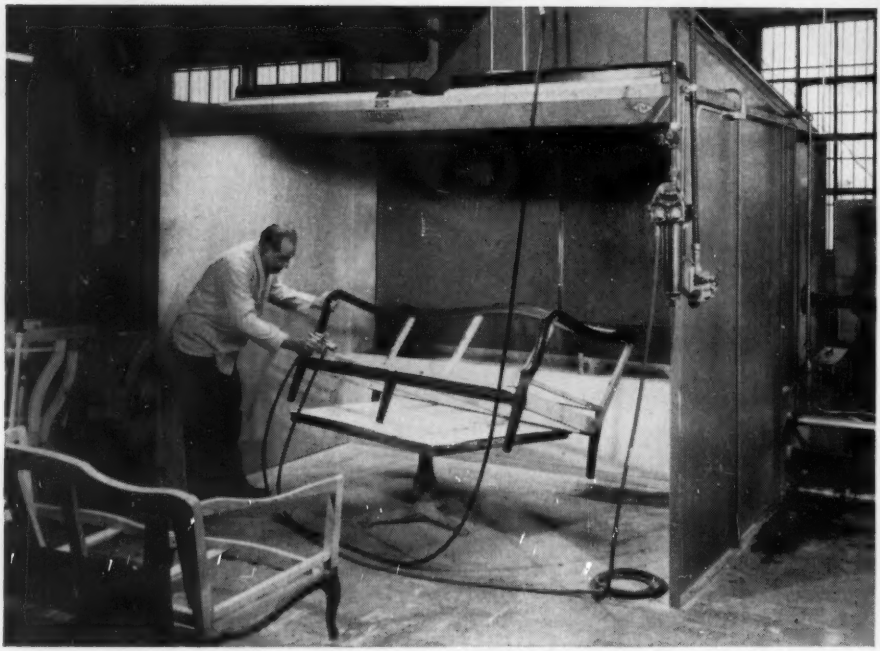
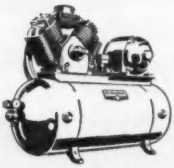
DeVilbiss equipment gives the



For years the John Smyth Company, Chicago, Ill., has been known as one of the finest custom furniture stores in the country. Their customers expect only the best and they get it. A major factor that insures exceptional quality is Smyth's up-to-date finishing shop.

Spray Guns

Air Compressors



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The John Smyth Company, Chicago, Ill., recently installed a complete DeVilbiss finishing department, including: touch-up guns, production spray guns and duster guns; air transformers; air and fluid hose; connections; and water-wash spray booths. They gained finer finishes and these three *extra* benefits:

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2. **lower insurance rates because of the added safety of this equipment**
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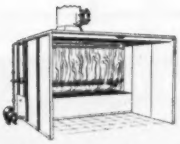
DEVILBISS

Spray Booths



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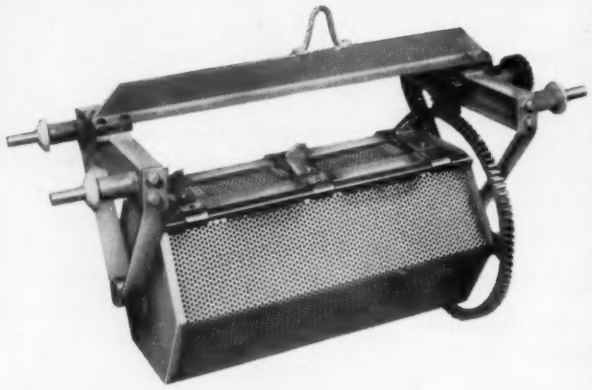
LAZO combines **DESIGN** with **PROGRESS**



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- Type material: Stainless or Monel
- Deep down design
- Removable lower strap hanger (new feature)
- Poly-ethylene covered upper structure
- Cam lock type door for long life, finest of its kind
- Simple removable trunnion shafts for easy replacement

Pioneers of the LUCITE PLATING BARREL

U. S. Patent No. 2,491,925
Can. Patent No. 445,821

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Unexcelled Service
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Specify Iridite . . . to meet military specs for corrosion protection during use or storage . . . for paint adherence . . . for low cost color coding . . . or to add quality and sparkle to your products. Here's how you can use Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

Iridite is approved under government specifications

ALLIED RESEARCH PRODUCTS
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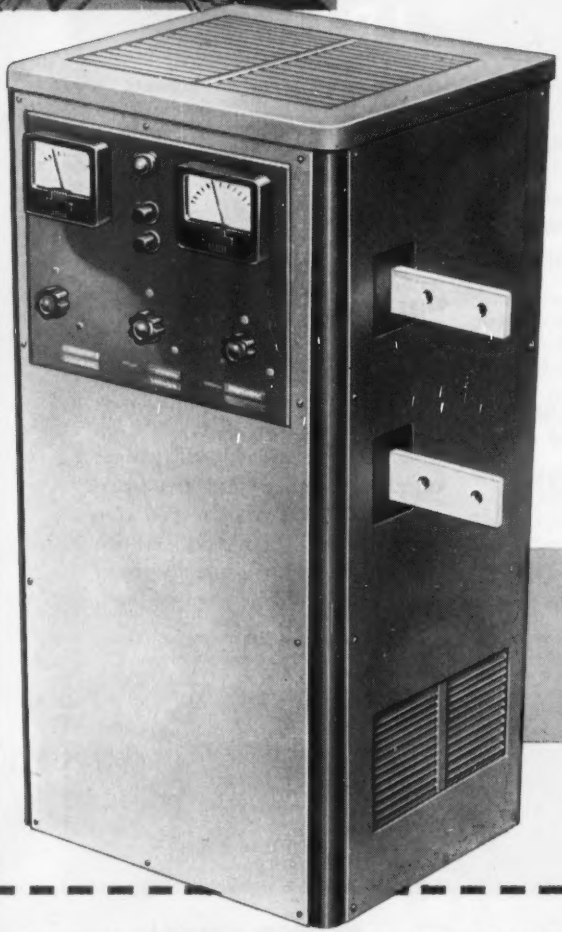
Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ARP Plating Chemicals.

Many hands lighten the load... AND

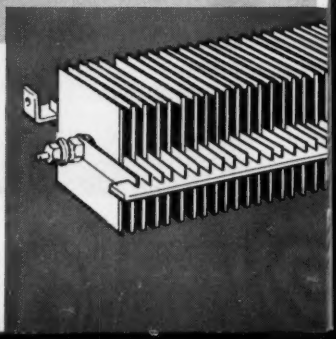
WAGNER RECTIFIERS' 40% INCREASED STACK AREA PREVENTS OVERLOAD



Electrical overloads and over-heating are avoided by ample rectifying stack area. The *new* Wagner Brothers selenium rectifiers offer you an *unprecedented* 5.4 square inches of rectifying surface per ampere. We've always rated conservatively, as the year-after-year performance of our previous models will testify. But this 40% increase sets new standards of operating efficiency and reduces your maintenance costs to a record low in electroplating history.

PEAK EFFICIENCY— Excess heating greatly decreases rectifier service life. This conservative Wagner stack design, more plates, greater surface, avoids high temperatures. And in addition, thermal overloads on magnetic contractors protect the equipment should a continued heavy overload occur. Our rugged transformers are especially built for our requirements, and insulated with the highest quality non-flammable insulating materials such as glass, mica and asbestos.

Advanced design and protection features increase service life, make your maintenance simply a periodic operation of oiling the fan and blowing dust from the unit. Installation is completely engineered, no fumbling.

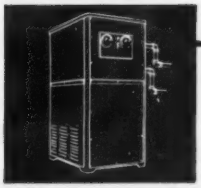


SIMPLE MAINTENANCE AND INSTALLATION

A WAGNER MODEL FOR YOUR SPECIFIC NEEDS

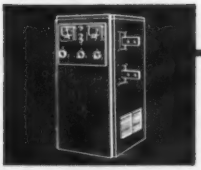
LARGE PACKAGE UNIT

Capacities from 2,000 to 50,000 amperes. Forced-air, fan-cooled type operates at all commonly used voltages. Requires only input and output connections for operation.



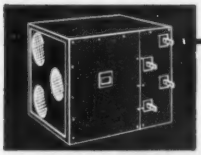
WATER COOLED

Capacities from 1,500 to 50,000 amperes. This unit consists of an air circulating system with a heat exchanger, uses your regular water supply (which can then be used for rinse tanks) as a heat removing medium. Functions well under very corrosive atmospheric conditions, or where extremely high ambient temperature is encountered.



SMALL PACKAGE UNIT

Capacities from 250 to 2,000 amperes. Fan-cooled with exhaust from the top of the cabinet. Very compact to facilitate moving. Requires only three wires for input and output connections. Equipped with ammeter, voltmeter, shunt, starting equipment and regulation if required.



CUBICLE

Capacity to 1,500 amperes. Designed for the building block type of operation, since the horizontal flow of cool air permits stacking. The addition or subtraction of total current output is easily accomplished.

BENCH TYPE

Capacities from 5 to 200 amperes. Special design affords extreme flexibility of operation and meets exacting requirements of control, ripple and accuracy ideally suited to laboratory research and development work.

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CURRENT REVERSAL UNITS

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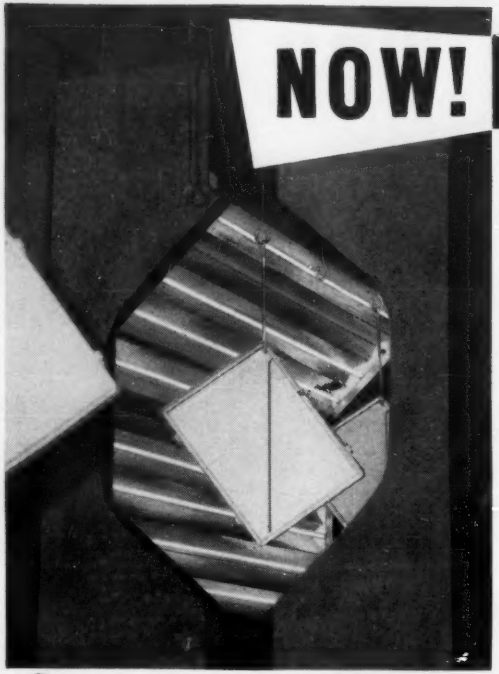

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CLEPCO gives you COLOR BLIND FUSED QUARTZ RADIANT HEATERS

RECENT PAINT OVEN TESTS

Proved all timings for CLEPCO Radiant Ovens showed independence of color used.

CLEPCO RADIANT OVENS SHOWED independence of weight of metal:—light gauges up to ⅛" showed uniform results at same speed.

THESE TESTS PROVED

CLEPCO Fused Quartz Radiant Heaters will reduce costs, speed production. Smaller floor space was required. More desirable than any existing paint ovens.

HEAD TECHNICIANS

of large auto manufacturer determined operating costs per piece were approx ½ that of standard infra-red bulb oven.

FURTHER TESTS PROVED

Pieces in gas fired paint oven ran —— 45 Min. at 300° F.
Same pieces in Clepco Quartz Oven ran 6 Min. at 270° F.
Metal castings in bulb oven took —— 50 Min.
Same castings in Clepco Quartz Oven took 18 Min.
A MORE VOLATILE SOLVENT IN SAME PAINT DROPPED TIME TO 8 MIN.

Also manufacturers of well known Clepco Quartz Immersion Heaters for acid and alkaline heating jobs.

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Delpark FILTERS PAINT

FROM PAINT SPRAY BOOTH WATER AT

FORD MOTOR COMPANY

DALLAS, TEXAS PLANT

● Keeping paint spray booth water clean has presented many difficult problems. These problems are the result of the over-spray in the wash water system which can not be entirely eliminated by hand skimming. By using proper compounds, flocculation of the over-spray paint particles creates a floating matte on the surface of the water. Through the use of automatic skimming and DELPARK *Industrial Filters* complete and continuous removal of the matte is easily accomplished. Costly hand-skimming is eliminated and tank cleaning requirements reduced to a minimum.

By automatic skimming and filtration, at short intervals or continuously, paint particles are constantly removed and not allowed to settle in the spray booth tank or circulate through the system. Plugged pumps and nozzles and paint sludge deposits in the eliminators are no longer a problem.

DELPARK Engineers are available for consultation with customers on the most satisfactory method of delivering the paint and water to the filter.

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Delpark INDUSTRIAL FILTRATION

INDUSTRIAL FILTRATION COMPANY
166 Industrial Avenue, Lebanon, Indiana

Gentlemen: Please send more information on Paint Spray Booth Applications of DELPARK *Industrial Filters.*

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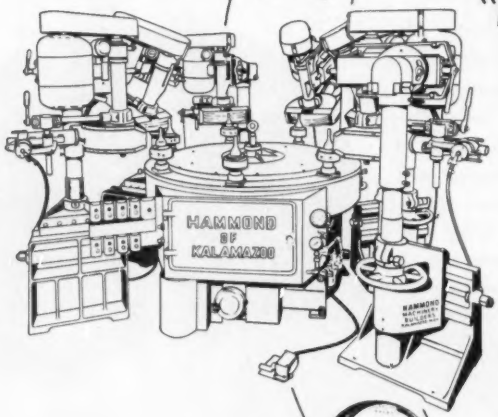
FINISHING and DEBURRING "KNOW-HOW"



The experience gained in over 70 years of machinery building has provided us with a big bank of "Know How."

This knowledge is drawn upon and added to every day. Our business is to share it with you to bring down high finishing costs. Many users of Hammond Automatics have found more efficient means of finishing by drawing on our bank of "Know How."

The Rotary Automatic illustrated represents one of our many types and sizes of automatic finishing machines for either continuous rotation or indexing. The head and stand units shown are a part of a large "family" which range in type and size up to 20 HP.

SEND SAMPLES and we will show you how much you can speed up production and cut costs.

Hammond Machinery Builders INC.

1622 DOUGLAS AVE. • KALAMAZOO, MICH.

avoid stream pollution due to chromium waste...

...with W&T Sulphur Dioxide Reduction Equipment

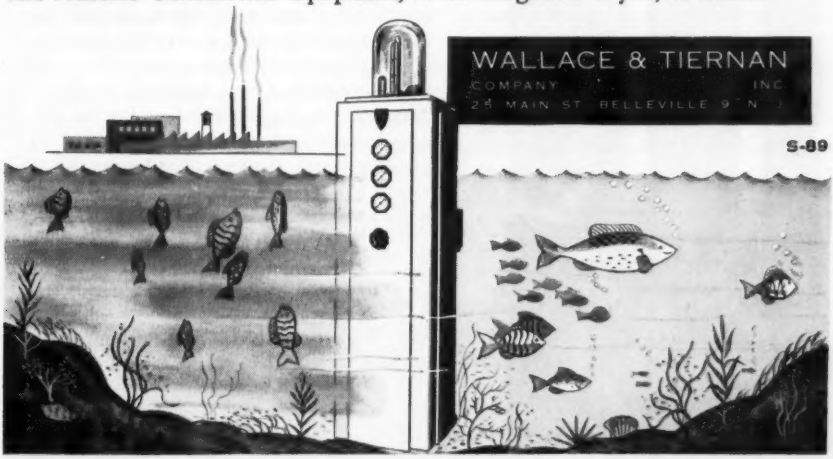
With the proper treatment equipment, toxic hexavalent chromium can be reduced by sulphur dioxide to the trivalent form and then completely precipitated by alkali for standard removal to a disposal area — such as a lagoon. After this treatment the waste water can be drawn off and safely disposed of in the usual manner. This treatment is in full compliance with most local and state pollution abatement laws.

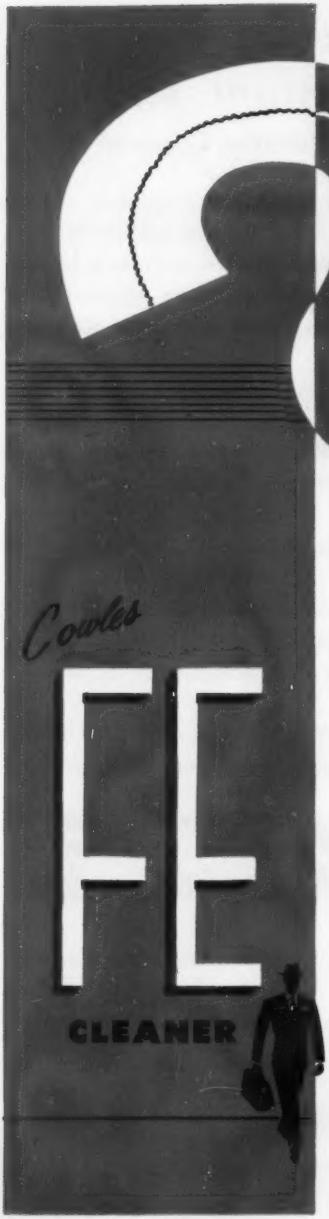
Wallace & Tiernan offers the heat treating and metal finishing industries several types of Sulphur Dioxide Feeders with optional controls for manual, semi-automatic or fully automatic operation. These feeders are adaptable to either the "batch" or "flow-thru" methods of treatment in both large and small plants.

Similar equipment is also available for the destruction of cyanide waste by alkaline chlorination.

W&T offers PROVEN EQUIPMENT — hundreds of similar units are serving industry today, EXPERIENCE — over forty years of building chemical feeding equipment, and SERVICE — field representatives are located in principal cities throughout the country.

Write today for additional information on W&T Sulphur Dioxide Feeders and Alkaline Chlorination Equipment, at no obligation to you, of course.





DOES POOR CLEANING SPOIL YOUR *Decorative Plating*

Don't let hazing, spotting in low-current areas, appearance of waterbreaks, or "half-way" cleaning ruin your plating work. Your Cowles Technical Man will remedy these and similar decorative plating headaches with Cowles FE, a highly alkaline electrolytic cleaner.

Designed for both direct and reverse electro-cleaning, Cowles FE is recommended for ferrous metals where extra-heavy dirt loads must be removed and high alkalinity and high current-carrying capacity are necessary.

Cowles FE Cleaner eliminates poor rinsing, "half-way" cleaning, short cleaner life. Solutions will not break down under electrolysis.

Let your Cowles Technical Man demonstrate Cowles FE Cleaner in your shop. Write or call today to arrange a convenient appointment.

COWLES CHEMICAL COMPANY
Metal Cleaning Department
7016 Euclid Avenue Cleveland 3, Ohio

editorial

Vol. 19, No. 4

JANUARY, 1955

Color Is The Keynote For 1955

Whether products manufactured during 1955 are finished with electroplated coatings, paint, lacquer or enamel finishes, or in porcelain enamel, these products will be available in a variety of colored finishes.

It is quite a long time ago that automobiles were finished in black only, and a limited choice of colors has been available for some time; however, this year's cars will feature an increased use of two colors and even three colors on a car (see pages 124-125 of this issue). Also, the 1955 models show increased use of gold plated trim units to add additional contrast and color to the polished stainless steel and chromium plated elements of the assembly.

Home appliances, long made and sold only in gleaming white with chromium plated trim, now are produced in a range of colors. Also, different colors are used on various parts of the same unit. Here too, gold plated trim has come into wider usage.

The use of copper tones, either electroplated copper or copper-colored paint finishes, has increased tremendously. The use of an antique copper finish on gas ranges was reported in the September 1953 issue of PRODUCTS FINISHING. Since then, dishwashers, refrigerators, freezers, kitchen cabinets, coffee percolators, and other appliances and housewares have been produced in copper, or finished or trimmed in copper. These products supplement standard lines of housewares finished in bright chromium plate.

These trends and developments pose serious problems for the finishing engineer and production executive. In some cases additional finishing facilities must be installed, and equipment altered and enlarged to meet new requirements. However, equipment and finish suppliers, working with product manufacturers, have helped the manufacturers tool up for the new production conditions.

The fact that the problems resulting from the new developments and new styles have been solved so quickly and successfully is just another indication of the virility, adaptability, and fundamental strength of the Finishing Industry.

Ezra A. Blount

—EDITOR

Finishes For Military Equip

By E. A. STOCKBOWER
Chief, Technical Service
American Chemical Paint Company, Ambler, Pa.

DESIGNERS and manufacturers of Ordnance materiel continuously face a difficult assignment: To produce military equipment which will withstand corrosion under conditions of storage and use which would destroy the average civilian product. The common enemy, corrosion, is capable of causing serious malfunctions by altering tolerances only tenths of thousandths.

This menace can best be minimized through specifications on materials and protective coatings based on research, sound intelligence of corrosive factors, and knowledge of the fundamentals on the part of designers, inspectors, and contractors.

Research, intelligence, and specifications are far advanced in the Ordnance field. Engineers skilled in combatting corrosion have concentrated on evolving up-to-date and technically sound specifications.

Current specifications are fundamentally sound and based on the best practice known today, yet Ordnance experts indicate there is an ever-growing need for revision. The scope of some co-existing specifications overlap, causing confusion to designers, inspectors, and contractors. Steps are being taken by the various military agencies to coordinate most of the major specifications, which certainly will ease the present situation.

Production Sample Approval

Army Ordnance emphasized the importance of proper production line finishing technique by the issuance of specification PAPD-191. This

ment Must Resist Corrosion

Fig. 1. Lined up at the Glenn L. Martin Company Airport, RB-57 Twin Jet Aircraft await delivery to the U. S. Air Force. The RB-57s are finished with "Alodine" 1200 in accordance with Military Specification MIL-C-5541, prior to application of gloss black paint with red lettering and figures.

(Photo courtesy the Glenn L. Martin Company, Baltimore, Md.)

CHURCHILL FINGER-BUFF*

#150 DN

Developed specifically

FOR BUFFING COPPER

Each section made with a double row of overlapped and staggered fingers. Fingers of adjacent sections meld and fit together very compactly. This specialized construction absolutely eliminates all streaking and gouging, and gives exceptionally fast cutting action. The No. 150 DN is ideal for buffing copper and like metals.

• Churchill Finger-Buffs* are competitively priced. Produced in all sizes from 6" to 18" diameters. For complete information write your problem.

*Churchill Finger-Buff, T.M. Reg. U.S. Pat. Off.

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specification, covering the finishing of ammunition components, requires a contractor to obtain approval from the Paint and Chemical Laboratory, Aberdeen Proving Ground, for the entire metal finishing sequence of operations, prior to the start of production. This approach was based on the premise that laboratory approval of a chemical treatment did not necessarily ensure high quality results when the same treatment was employed on production lines. Rather, it was believed that a sequence of operations, requiring close control and supervision on the part of the contractor-Ordnance team, was more important. This same specification required that frequent and various accelerated tests be conducted on representative production samples, which also departed from the "approved product" approach.

Technical Symposia

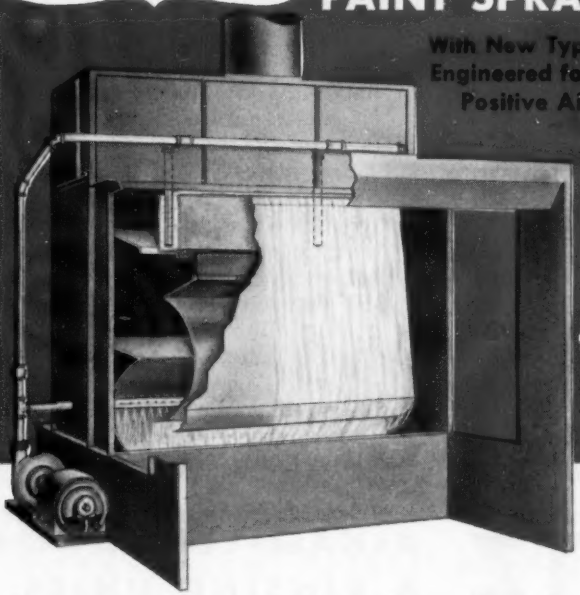
To assist Ordnance designers, inspectors, and contractors in the interpretation of the latest metal treating specifications, the American Chemical Paint Company offered technical symposia on the general subject of "Corrosion of Metals" to Army, Navy, and Air Force Ordnance agencies. The object of each program was to explain the fundamental factors governing corrosion, supplement the literal translation of current specifications with technical know-how based on over thirty years of experience in this field, and encourage teamwork and the flow of information between contractor, inspector, mission arsenal, and chemical supplier, particularly with regard to interpretations of specifications.

The response to the company's

DESPATCH

NEW WATER WASH PAINT SPRAY BOOTH

With New Type Baffle Chamber Engineered for 100% Efficiency Positive Air Cleaning Action



Entirely New! The new type baffle chamber provides a positive air cleaning action that prevents paint pigments, moisture and volatiles from reaching the exhaust stack or the outside of a building.

The new air scrubbing chamber features a specially designed spray header mounted within two curved baffle plates. When water is pumped into the header it sprays [illegible] and strikes the baffle plates, building up a violent spray turbulence that removes practically every last particle of paint.

Lower Operating Cost by Actual Test!

NEW **Water curtain supply header** is located *outside* the plenum chamber for easy access. Vertical feeder lines do not interfere with tank adjustments.

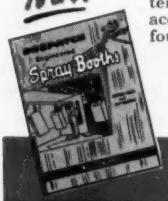
NEW **Water Curtain Supply Tank** is completely adjustable. It provides a uniform, non-splashing flow of water that completely covers the curtain and prevents any paint accumulation.

NEW **Bleeder Line Keeps Header Clean** . . . keeps orifices from clogging. The new Bleeder line causes a continuous flow of water from the bottom of the header, preventing the settling of solids in the bottom of the pipe.

NEW **Fast-Action Removable Panels** permit easier maintenance. The entire interior of the booth is accessible in just 3 minutes, by removing just four fast-action clamps per section.

1. Will exhaust air containing not more than 5 grains of solid every 1000 cu. ft. of air handled.*
2. Will exhaust air containing not more than 50 parts per million solvent vapors.*
3. Will reduce down time for cleaning to a very minimum, thus increasing production.
4. Will prevent paint pigments, moisture and volatiles from reaching exhaust stack or outside of building.
5. Will thoroughly eliminate moisture from exhaust air, before it is exhausted.

**Based on spraying rate of approx. 3 gal. per hour per ft. length of booth.*



Write for Bulletin No. 66

Dept. C

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Chicago Office: 4554 N. Broadway

Sales and Service in All Principal Cities

DESPATCH OVEN COMPANY

offer was gratifying, and, within the past two years, the American Chemical Paint Company has presented technical programs to 26 military Ordnance agencies.

Classes of Coatings

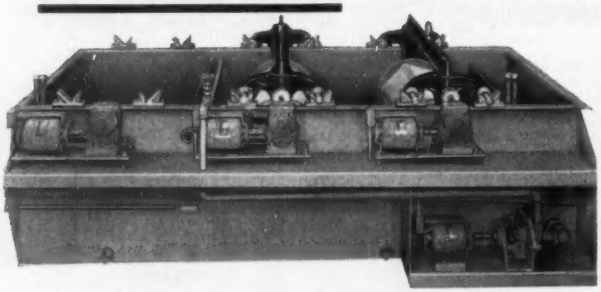
There are three basic types of chemical film coatings used extensively by the military today for the protection of metals. These coatings, sometimes called "conversion coatings," are formed characteristically by a chemical reaction between a metal surface and a chemical solution, which converts the metal surface to non-metallic form. The term "chemical film," in this instance, excludes metallic coatings (plating) and organic films (oils, greases, and paints). There is at least one military specification covering each of the following classes: paint-bonding, corrosion resistance, wear resistance.

Production Line Design Considerations

There are three methods of applying chemical coatings, and it is important that the proper method be chosen for each production requirement: recirculated power spray; immersion; manual application. Two basic factors determine the method to be used in the design of equipment for any production operation: the process being employed; the volume of production. The production volume factor can be analyzed as follows:

Power Spray Application: Used for large volume production lines (normally more than 2,000 to 3,000 square feet of metal surface treated

STUTZ ALKALI CLEANING & RINSING UNITS



for Heavy Duty High Speed Production

Stutz design in single or multiple units with or without rinsing compartment. Solution circulating pump for rapid elimination of surface grease into trap from which complete removal is made by simply draining of trap compartment daily.
Rotation of work in cylinders together with solution agitation of pump, provides complete cleaning in a single operation.

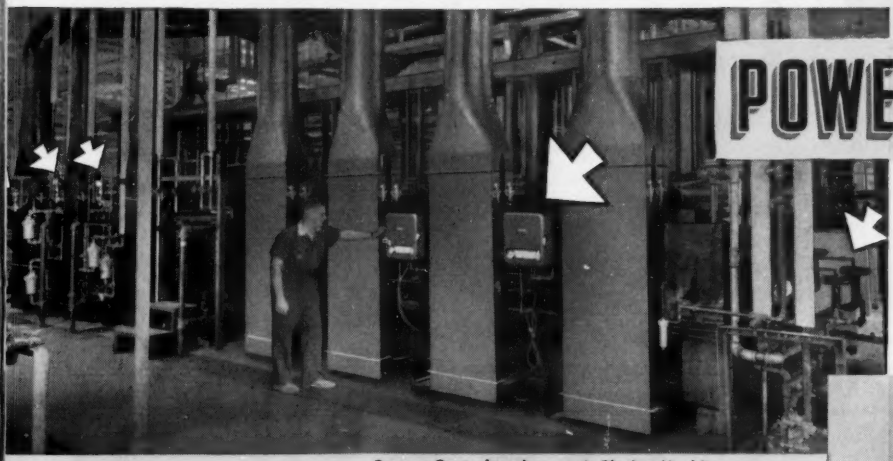
Cylinder drive and pump motors are ⅓ h.p. 440-220-3-60 with heater type motor control switches. Plate or pipe coils installed.
With this type of equipment, vapor degreasing is not required.
Can also be furnished for electrolytic cleaning and with P.R. current will do excellent removal of heavy furnace scale, rust, etc.

Write for Prices and Illustrated Catalog

GEORGE A. STUTZ Mfg. Co. 1647 Carroll Avenue Chicago 12, Illinois

"Complete metal finishing equipment and supplies"

FOR TEMPERATURE CONTROL *Call* POWERS



Powers Control on Automatic Plating Machine.
Left, Self-Operating Regulators for Cleaning and Rinsing Operations. Right, Air-Operated Temperature Indicating Controllers Regulating Chromium Plating.

Sunbeam CORPORATION ASSURES HIGH-QUALITY VOLUME PRODUCTION FINISHING WITH POWERS TEMPERATURE CONTROLS

Metal finishing operations at Sunbeam Corp. are critical. A world-known reputation for quality appliances makes rigid final inspection essential. Yet, high-volume production must be maintained on modern automatic metal finishing equipment.

As an essential aid to high-quality, high-volume metal finishing operations, Sunbeam Corp., uses Powers Temperature Control Equipment extensively throughout their Chicago and Canadian plants.

Powers Temperature Controls can help you, too . . . whether your plant be large or small. They'll help you turn out a better product, while saving you money. Contact the Powers office nearest you, or write us direct.

(b74s)

SUNBEAM FRYPAN

SUNBEAM COFFEEMASTER

SUNBEAM MIXMASTER

POWERS CONTROL

THE POWERS REGULATOR COMPANY
SKOKIE, ILLINOIS
Offices in 60 Cities in U.S.A., Canada, and Mexico • See Your Phone Book
OVER 60 YEARS OF AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL

per hour). Economics and local conditions determine final decision between immersion or power spray equipment in borderline production ranges.

Immersion Application: Used for intermediate to low production ranges, except for those processes which can be applied by immersion only. Fully automatic immersion equipment is superior to manually operated equipment, because of consistency of results obtainable.

Manual Application: This method is used for touch-up work or when the scale of production is extremely low, and, occasionally, when the items treated are extremely large, preventing economical power spraying or immersing.

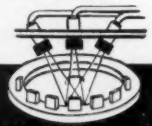
Oxide Removal

A great deal of controversy once centered around the problem of scale or oxide removal prior to the application of chemical coatings. Most specifications now require complete removal of oxides and scale to ensure higher quality results from all production lines.

It has logically been suggested that light rust blushes or thin, uniformly adherent scale (on steel surfaces) will be chemically converted to form satisfactory coatings in certain coating processes. The basic problem, however, lies in defining accurately in specifiications the amount and

which of these POLISHING PROBLEMS are yours?

- ☐ Reduction of belt sanding stages
- ☐ Cutting down buffing time
- ☐ Reduction of hand polishing
- ☐ Blending directional grind lines
- ☐ Lowering micro-inch finishes
- ☐ Exposing cracks and fractures
- ☐ Smoothing belt marks
- ☐ Imparting non-directional finishes
- ☐ Semi-reflective surfacing
- ☐ Blending brush marks
- ☐ Surface uniformity
- ☐ Removal of stress marks
- ☐ Obliterating
  - ☐ Scores ☐ Tool marks
  - ☐ Reliefs ☐ Chatter
  - ☐ Pits ☐ Scratches
- ☐ Matte finishing
- ☐ Thread fit and turnability



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TWO SPEED

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THE CRO-PLATE COMPANY INC.

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A NEW APPROACH TO PICKLING AND DESCALING PROBLEMS

Pennsalt PM-90 and Pennsalt Technical Service

Those headaches of raw acid pickling can be eliminated! Now Pennsalt PM-90 will remove oxides and scale with speed and efficiency. Here's what you can have:

- *Brighter finish*
- *Smoother finishes (less plate wasted)*
- *Simplified maintenance*
- *Reduced cost*

Pennsalt PM-90® is a specialty acid-type cleaner that does everything a raw mineral acid bath will do—yet *avoids harmful attack on the base metal.* This gives you two direct advantages:

1. You reduce the demands on your foreman's time. The pickling operation no longer requires constant supervision to prevent burning and pitting.
2. You cut operating costs. Tank life increases sharply since the acid strength is not wasted in excess action.

Before you change to PM-90, test the rest of your operation, too. Call your Pennsalt Metal Cleaning Specialist for a free survey of your cleaning line. That way, you can be sure of getting top efficiency from every tank in the line.

Or write: Pennsylvania Salt Mfg. Co., Metal Processing Dept., EAST: 983 Widener Bldg., Philadelphia 7, Pa. WEST: Woolsey Bldg., 2168 Shattuck Ave., Berkeley 4, Calif.

Pennsalt Chemicals

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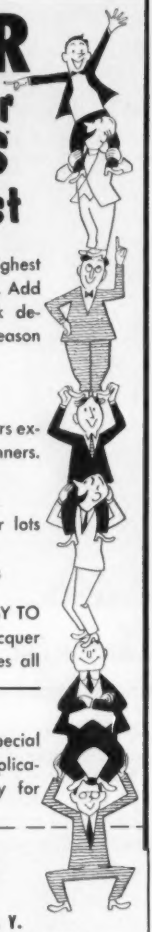
TOPS ALL for THINNERS
At Lowest Cost



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We use Lacquer Thinner on:
☐ Metal ☐ Wood ☐ Other_____
We want it to dry:
☐ Fast ☐ Slow ☐ Medium

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type of oxide or scale allowable. This is a difficult problem, which to date has not been resolved.

A typical sequence of industrial metal finishing operations is:

1. Cleaning.
2. Water rinsing (normally omitted if vapor degreasing is used as cleaner).
3. Acid de-oxidizing.
4. Water rinsing.
5. Chemical coating.
6. Water rinsing.
7. Final acidulated rinsing.
8. Drying (omitted if certain water displacing oils are used in 9).
9. Application of organic finish, if used.

It is interesting to note that most experienced Ordnance contractors design finishing lines to include Stages 3 and 4 above, even though items being treated have been freshly machined or sand blasted for scale removal. This is done to ensure compliance with the specifications which require scale-free and oxide-free surfaces prior to the application of the chemical coating. Thus special handling is not required for those items which have blushed after machining, during temporary line stoppages or weekend shut-downs, or have residues of scale remaining after the blasting operation.

In short, acceptance of items by inspection at this point is, to a large extent, ensured by the inclusion of Stages 3 and 4. Experience has shown this insurance measure to be practical from an economical standpoint. The exception to this occurs occasionally in the application of heavy phosphate coatings, when it is not possible to include the deoxidizing

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NICKEL	Wagner Brothers' Iso-Cast Oval form, cast under the strictest controls which guide our entire anode production to afford best grain size for corrosion in nickel plating bath; available in any length.
COPPER	Flat-Top*, smooth-surfaced, free from dirt, silicon and oxides; greater weight and increased predictability. Wagner Brothers' Iso-Cast Oval, cast from electrolytic copper under rigid controls. Lectrocop†, electrolytic slab, various dimensions.
ZINC	Cast by Wagner's exclusive method in the original Flat-Top* form to provide a smooth surface free of contamination, easily identifiable because of its distinctive form. Also available in Wagner Brothers' Iso-Cast Ovals.
TIN	Available in any length in our corrugated Wagner Brothers' Iso-Cast form with locked-in steel contact hook, in standard balls and Iso-Cast Ovals. We also produce Tin-Lead (15% tin, 85% lead) and Tin-Zinc (80% tin, 20% zinc), same forms.
CADMIUM	Available in standard ball form.
BRASS	Various commercial alloys of zinc and copper in both Flat-Top* and Wagner Brothers' Iso-Cast forms.

Wagner Anodes are available in principal areas. Phone or write today for information.

*REGISTERED †TRADE-MARK

Wagner Brothers Products: Automatics. Semi-Automatics. Precision Hard Chrome Units. Tanks. Filters. Rectifiers. Anodes. Anode Containers. Tank Linings. Solutions. Supplies.

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stages (Stages 3 and 4) and maintain quality requirements.

Accelerated Testing

In general it can be stated that for comparable items, those which rate highest by accelerated tests now available, produce highest quality outdoor exposure results.

One recurring problem involving standard salt fog testing frequently seems to cause difficulty to both inspectors and contractors. The angle of exposure of a significant, ratable surface in a salt fog cabinet is critical, and this angle is defined as 15 deg. from the vertical for the testing of steel items, and 6 deg. from the vertical for aluminum items. All other factors being equal, the test is less severe as this angle diminishes, and more severe as this angle is increased. Experience indicates that this variable is frequently disregarded, causing difficulties to inspectors and contractors alike.

Below are listed accelerated tests which serve as guides to those interested in the study of the relative merits of finishing systems:

1. Salt fog exposure.
2. High humidity exposure (80-100 per cent R.H.).
3. Water detergent solution and electrolyte immersion.
4. Steam exposure.
5. On-side and reverse impact tests.

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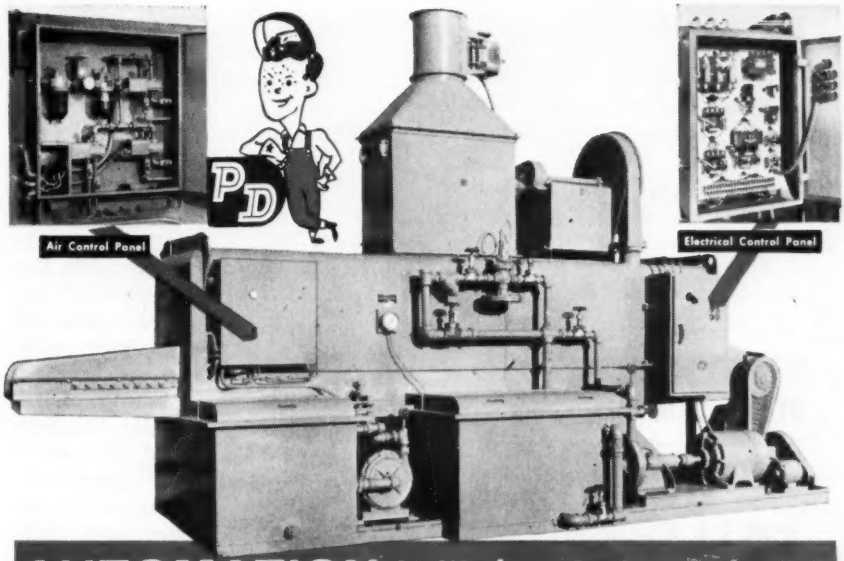
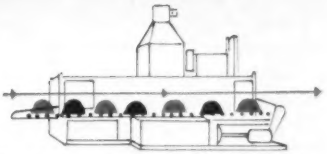


AUTOMATION in Washing Equipment by P-D

(Above photograph is of a 3-Stage Washer for Torque Converter Housings)

Many important production problems are met and solved by this Power Spray Washer—designed, engineered, and built by Peters-Dalton. It meets the full meaning of the newly coined word "automation" by eliminating many processes that were formerly manual or handled through separate facilities.



Extremely efficient, time-saving, and economical in operation is the action of this 3-Stage Washer. It sprays both the inside and outside of converter housings. The operation is done in a continuous action—first, the housings are fed to the machine on gravity rolls—then an air cylinder moves each over the inside spray manifold. This same motion holds back the unit following and moves the preceding unit onto a cross-rod conveyor for outside wash. Another cylinder positions each unit over the manifold and blocks the shaft opening. The inside and outside wash are both heated emulsified oil cleaners—room air blow-off removes excess oil. The exhaust has an eliminator and a filter box for entrapping overspray.

Whatever your problems are for washing products during your manufacturing process, count on Peters-Dalton for the correct solution. Peters-Dalton is an organization of specialists—staffed by men who KNOW the answers. Washers of all sizes, types and required uses can be developed to meet your needs — whether from a single unit or to a complete installation — depend on P-D to give the services and production you have the right to expect. We invite inquiries—Just Write, Wire or Phone.

Ask for our new Power Spray Washer Tech. Bulletin No. 301.

P-D Peters-Dalton INC.
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- *Hydro-Whirl Paint Spray Booths*
- *Industrial Washing Equipment*
- *Drying and Baking Ovens*
- *Hydro-Whirl Dust Collecting Systems*

6. Mandrel bend tests.
7. Cup distension tests.
8. Various types of adhesion tests (knife, tape, and proprietary adhesion testing machines).
9. Carbon arc lamp exposure, usually combined with periodic water spray.
10. Water fog.
11. Coating weight, thickness, and continuity determinations.
12. Abrasion tests.
13. Surface resistance measurements.
14. Powder and high explosive compatibility tests.

Appearance Requirements

Another problem involving phosphatizing which besets both contractors and local inspectors is the interpretation of "appearance" requirements of phosphate coatings as typified by paragraph 3.4 of MIL-C-12968 (ORD). Confusion reigns over mandatory requirements such as: "They (the coatings) shall show no mottled appearance . . . and shall not exhibit a coarsely crystalline texture (the crystalline pattern shall not be visible to the unaided eye)." The various interpretations as to what constitutes a "mottled appearance" and a "coarsely crystalline texture" often strain relations between inspectors and contractors.

Possibly it would be helpful

Stop dust quickly, at lower cost, with Dustkop. Thirty-seven standard models *ready to use* and available from stock. Dustkop conserves floor space, reduces maintenance. Collects almost all types of industrial dusts. Write for descriptive literature.

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- **Better Balance**
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Because of their construction, Pittsburgh "Lightning" knotted sections have *exactly the same number of wires in every knot.* As a result, you get a brush with perfect balance—one that will wear uniformly and cause less bearing—destroying vibration in the machine that drives it!

What's more, the special type of wire used in these knots is the fastest cutting, with the longest life, that can be produced. Built for the toughest applications, "Lightning" brushes are perfect for cleaning welds, removing scale or rubber, or cleaning parts where penetration brushing is needed.

This is just one example of superior Pittsburgh construction, engineered for both general and specific applications. For details of the complete line, write for free Catalog No. 54-W. Address: PITTSBURGH PLATE GLASS CO., *Brush Div.,* Dept. V-1, 3221 Frederick Ave., Baltimore 29, Md.

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if specifications would require that an item, or section thereof, exhibiting abnormal or non-uniform coating, be subjected to accelerated testing with a clearly defined point of failure. That is, if the item does not look right, test it, by any one or combination of the accelerated tests shown above.

Utilizing various combinations of the above tests, finishing technicians can readily separate excellent finishing systems from inferior treatments. Also, certain combinations of these tests are being utilized effectively to determine minimum production quality standards. Final decisions on any finishing system, however, are normally based on data obtained from actual long-term exposure tests conducted under typical service conditions.

By utilizing these methods, Ordnance laboratories of the various services, as well as laboratories of the many companies specializing in this field, endeavor to raise quality standards to ensure that more military items will be serviceable and operable when, and if, they are required to meet an emergency.

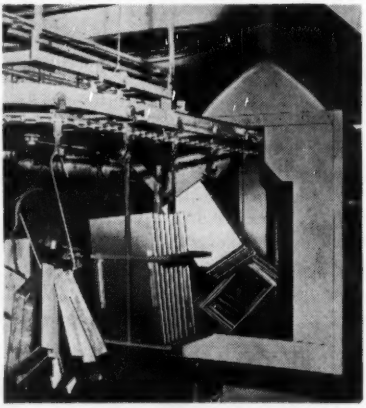
A year end statement issued by I. W. Wilson, President, Aluminum Company of America, states that the future of the aluminum industry continues to be bright. New markets for this light metal are developing steadily. Established uses are achieving healthy increases. The market outlook for 1955 is good, and long range potentials are encouraging.

The past year has been notable for advances in the development of aluminum alloys, processes, and finishes made in building products, transportation, and in many other directions.

this **INDUSTRIAL WASHING MACHINE** *runs* **3 TIMES FASTER**

THAN OUR CLIENT EXPECTED

Prepared for a conveyor speed of 7 feet an hour, this manufacturer of component metal parts was amazed to find that his Industrial Machine produced clean work with a phosphate coating ready for painting at a speed of 21 feet an hour! It's one of 38 standard basic designs that can probably be made to fit your needs. If not, our engineers can design a machine that will do the job.



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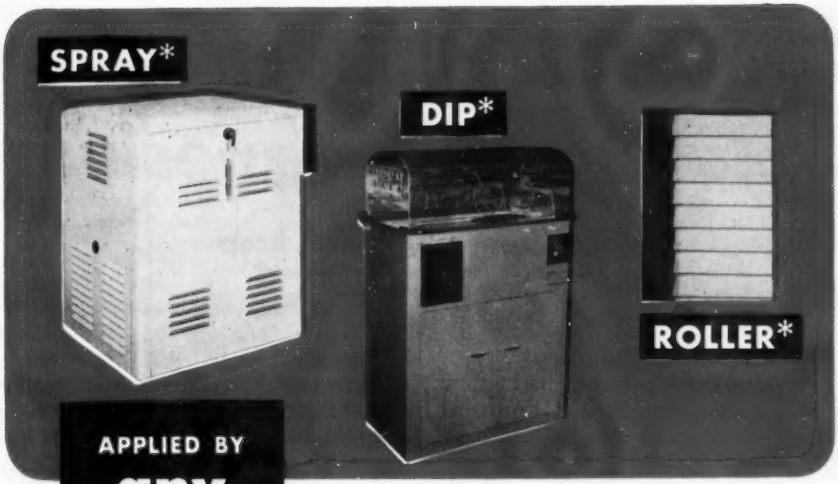


APPLIED BY **any** METHOD

Vinsynite UNDERCOAT IMPROVES FINISH AT LOW COST

You can expect exceptionally fine finishes on your metal products when you use Vinsynite next to the metal. An improved wash-primer type of metal treatment, Vinsynite deposits *in one application* a phosphate coating topped by a thin organic film. In that *one application* it gives you *both* corrosion-resistance and maximum adhesion for topcoats.

Vinsynite can fit readily into your shop and your production schedule, since types are available for application to *any* metal by *any* standard method. Its use requires no close chemical control, no multi-stage baths, no special personnel.

Get the facts on Vinsynite. Its advantages are well worth your investigation.

WRITE FOR DESCRIPTIVE BULLETIN

* PRODUCTION LINE EXAMPLES OF VINSYNITE VERSATILITY

SPRAY—Oil and gas-fired heating units built by York-Shipley, Inc., York, Pa. and used extensively by large-scale home builders. Spray coated with Vinsynite and finished with white enamel.

DIP—Vinsynite under gray enamel and clear varnish helps baby incubator cabinets, built by American Sterilizer Co. and finished by Erie Art Metal Co., resist hard use in hospitals.

ROLLER—Aluminum siding for houses is roller coated with Vinsynite and enamel topcoats when in strip form, before fabrication. Made by K and Z Manufacturing Co., Greensburg, Pa.

SPECIALTY COATINGS, INC. Division of Thompson and Co.

1010 Allegheny Ave., Oakmont, Pa.

Vinsynite CHEMICALLY BONDS FINISH TO METAL

Commercial Electroplating of Magnesium

By LEO D. GODDEYNE and DENNIS J. GODDEYNE
Goddeyne Manufacturing Company
Bay City, Michigan

THE Lufkin Rule Company of Saginaw, Michigan, is now using the Dow Chemical Company's process for electroplating magnesium to apply a copper, nickel, and chromium finish on die cast magnesium rule cases. This is the first mass production application of the process.

A satin finish chrome is used for functional reasons and for economy. The basic steps required for this process, as described below, are common to most electroplating processes, with the exception of the zinc immersion coating.

The sequence of operations required for the electroplating of the magnesium die cast rule case are summarized in the following:

1. Removal of foreign contamination.
2. Flash removal and satin finishing.
3. Cleaning.
4. Activating.
5. Zinc immersion coating.
6. Copper strike.
7. Copper plating.
8. Nickel plating.
9. Chromium plating.

Removal of Foreign Contamination

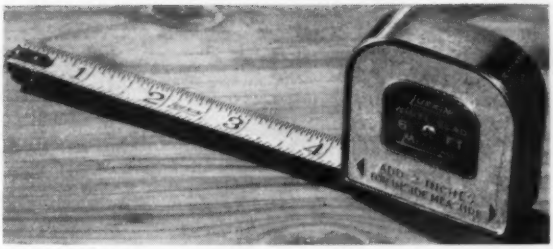
On areas not machined, pickling is necessary to remove contamination present when castings are received from the die caster. The composition of the pickling solution is as follows:

Chromic acid ..... 37.5 oz./gal.
Conc. nitric acid ... 3.25 oz./gal.
Hydrofluoric acid
(60% HF) .....1 fl. oz./gal.

The castings are pickled for from 1 to 3 minutes depending on the age of the bath. This solution is contained in a Koroseal lined tank and is operated at 70-90 deg. F. It is necessary to surround the pickling tank with a refrigerated water jacket to prevent the temperature of the solution from rising excessively. The parts are processed in a transparent plastic cylinder which revolves in the pickling solution in order to achieve a uniform pickle. After pickling the parts are rinsed in water and dipped in a weak alkaline solution to counteract residual chromic acid.

Flash Removal and Satin Finishing

Both of these operations are performed on a five station indexing rotary automatic polishing machine. The machine is fitted with special cammed fixtures to allow a polishing attachment to follow the eccentric periphery of the case.



Case for Lufkin steel tape rule is die cast magnesium finished in chromium plate. Tape rule is tempered steel, phosphatized and then covered with abrasion resistant clear plastic and finished in chemical resistant white.

(Photo courtesy Dow Chemical Co., Midland, Mich.)

The cases are assembled prior to machining and are machined in pairs. This pairing is maintained throughout the plating process and final assembly of the tapes.

Flash is removed with 100 grit aluminum oxide abrasive belts. The satin finish is applied with 120 grit aluminum oxide abrasive belts. A small amount of grease compound is applied to belts to prevent loading.

Cleaning

The parts are racked on racks coated with a plastisol-type baked coating. Twenty complete rule cases are plated on each rack, or a total of 40 castings. The parts remain racked throughout the entire plating process.

The castings are cleaned anodically using a reverse current. Wyandotte FS cleaner is used in a concentration of 4 oz./gal. at a temperature of 170 to 190 deg. F. A current density of 40 amp./sq. ft. for 1 to 4 minutes is applied.

Activating

After cleaning, and prior to the zinc immersion coating, the surface is activated by immersion for 20 seconds in an aqueous solution of the following composition:

Phosphoric Acid ($85\%H_3PO_4$) ..... 1.6 pints
Sodium, potassium or ammonium acid fluoride ($NaHF_2$, KHF_2, or NH_4HF_2) 13 1/3 oz.
Temperature ....70 to 90 deg. F.

Zinc Immersion Coating

The zinc immersion coating is deposited in a bath composed as follows:

Tetrasodium pyrophosphate .....16 oz./gal.
Zinc sulfate monohydrate .....4 oz./gal.
Potassium fluoride ..0.94 oz./gal.
Potassium carbonate 0.67 oz./gal.
Temperature .....75-180 deg. F.
Mild agitation
pH .....10.0-10.6 colorimetric

Copper Strike

After application of the zinc immersion coating, the parts are given a thin copper deposit in a Rochelle salt copper strike of the following composition:

Copper cyanide .....5.5 oz./gal.
Sodium cyanide .....6.8 oz./gal.
Sodium carbonate ...4.0 oz./gal.
Rochelle salt .....6.0 oz./gal.
Sodium hydroxide ...1.0 oz./gal.
Free cyanide .....0.75 oz./gal.
Temperature .....120 deg. F.
pH 10.0

Electrical contact is made as quickly as possible at a high current

density of 30 amp./sq. ft. for the first 30 seconds. The current density is then decreased to 20 a.s.f. for 5½ minutes. This is necessary to cover the zinc immersion coating as quickly as possible to prevent its destruction by the copper cyanide solution.

Copper Plating

A pyrophosphate-type copper solution is used for copper plating. The pyrophosphate bath is modified by the addition of 30 to 60 gm./l. of potassium fluoride, to minimize attack in the event of porosity in the strike or failure to cover. A minimum of 0.0008 inch of copper is deposited in this solution operated at 130 deg. F. for a period of approximately 35 minutes at 25 amp./sq. ft.

Nickel Plaing

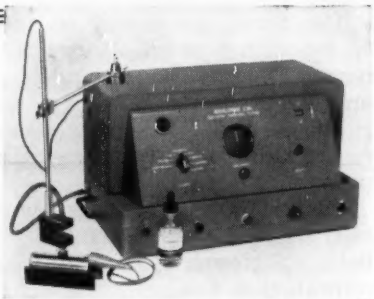
A Watts-type bright nickel solution, operating at a pH of 4.5, is used for nickel plating. Parts are plated with a minimum of 0.0002 inch nickel, or for approximately 15 minutes at 25 amp./sq. ft. The operating temperature is 130 deg. F.

For the chromium plating, a standard chromic acid bath is used. Little difficulty is experienced if the other steps have been properly executed. Adhesion is normally excellent. Most cases of poor adhesion were traced to improper processing in the zinc immersion or copper strike processes.

Adapted for publication in PRODUCTS FINISHING from a paper presented at the Tenth Annual Meeting of The Magnesium Association, November 15, St. Louis, Missouri.

Just A Minute . . .

and YOU can be SURE of the Plating Thickness with the



KOCOUR Electronic Thickness Tester

A minute is the time required for the average test . . . a relatively short time to check your work and be sure it's right. Readings are direct . . . accurate to within 90-95% . . . determines the thickness of decorative or hard chromium, silver, tin, cadmium, zinc, brass, copper, nickel, lead, and other plating on various base metals and materials. See how the Electronic Thickness Tester can solve your problems.

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WRITE FOR LITERATURE

PIONEERS IN CONTROL FOR THE ELECTROPLATING INDUSTRY

FORD OF CANADA
BARREL PLATES AUTOMATICALLY IN
STEVENS AUTOMATIC BARREL Plating and Processing Machine

Tons of nuts, bolts, stampings, washers, screws and other small parts are automatically zinc plated in the modern Ford Motor Company of Canada, Ltd., plant every day. The machine that does the job is a Stevens Automatic Barrel Plating and Processing Machine.

In exactly 54 minutes a barrel makes the complete cycle of cleaning, acid dip, rinse and plating tanks, *automatically* empties the zinc plated parts and is ready to start the cycle again. Fifty-four similar barrels are continuously going through the same cycle.

There are hundreds of Stevens Automatic Barrel machines used by industry today. It is *proven* equipment. Management finds many cost saving advantages such as:

A uniform product • Less rejects • Minimum labor requirements • All operations controlled • An integral part of straight-line production • Low maintenance cost • Can easily meet future manufacturing changes • Processing flexibility • Lower cost of production per hour than any other method of processing • Lends itself to today's trend toward automation.

Are you plating your parts at the lowest possible cost? Check to see how Stevens Automatic Barrel Equipment can help you. Call your Stevens Sales Engineer or write direct.

Bookings for the showing in your plant of a twenty-six minute, 16 mm. sound film featuring the famed Stevens Automatic Barrel, will gladly be arranged.

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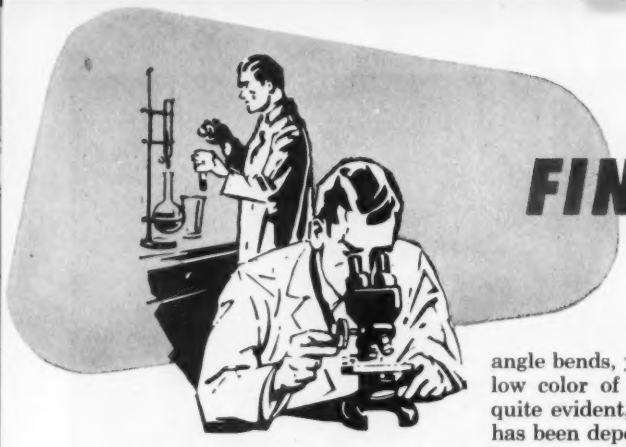


FINISHING

Question: *We are a manufacturer of sliding door hardware and cabinet hinges. We enclose a sample of one of our hinges in bright chrome finish. At the present time we are having each of the leaves plated separately and assemblying hinges afterwards. We have consulted with four of the local platers and have had samples of hinges run after the parts were assembled. These samples have been unsatisfactory because the plating leaves the parts too stiff to operate properly, although it is possible to free them by oiling each and working it by hand. Have you seen similar parts plated successfully in this manner, and do you have any suggestions as to what we might try in order to accomplish this?*

We also furnish this hinge with a gray prime coat paint. At present the paint is spray applied and baked. Our volume is not sufficient for this to be done automatically and the spraying and handling is done by hand. Do you think that a dip application would be neat enough for this? *R.B.*

Answer: Before commenting on the possibilities which you suggest, may I point out that the chrome plating job on these hinges is not particularly good, although it may be good enough for your purpose. Specifically, if you will observe the inside areas of right angle bends, you will note that the yellow color of the underlying nickel is quite evident, showing that no chrome has been deposited in these areas. Perhaps this is not an important consideration on this product.

It would seem that the design of the hinge almost eliminates the possibility of the hinges being assembled and then plated after assembly. I am referring you to two sources of information from whom you can obtain assistance on this problem.

It is quite possible that changes in preliminary preparation and the use of barrel nickel plating may offer economies over your present method. Perhaps through mechanical finishing methods, you can make a greater saving than would be possible through assembling the hinges prior to plating using your present plating and polishing techniques.

With reference to finishing hinges with a prime coat of gray paint, it is my opinion that this can be done successfully after the hinges are assembled. Further, I believe that it can be accomplished by dipping methods which perhaps may utilize the comparatively recent conception of a vapor drain chamber as a second operation after dipping. We are referring you to sources of information concerning dipping equipment and techniques.

——— fc ———

Question: *Is there any plating or finishing process that could be used on*

CLINIC

copper and would act as an insulator and withstand temperatures of around 1500 deg. F.? *R.E.G.*

Answer: It would seem that all plating processes, since they involve metal, would automatically be ruled out in view of the fact that all of them conduct electricity.

A number of paint or plastic coatings could be applied. Not all of them, however, would withstand temperatures of 1500 deg. F.

There are available ceramic or vitreous enamel coatings which may be applied to copper and which will serve as insulators and withstand the desired temperature. Information concerning such coatings has been published in PRODUCTS FINISHING. We are referring you to sources of information for ceramic and other coatings.

——— fc ———

Question: *How can a polished finish be obtained on aluminum die castings without buffing?* *J.H.W.*

Answer: A great deal depends on the luster which you require in a surface finish. The first mechanical method which suggests itself is that of barrel finishing or barrel tumbling. There are several processes for accomplishing barrel finishing and we are referring you to sources of information.

——— *fc* ———

Question: *After anodizing I dye metal for 15 minutes, rinse and dip in nickel acetate. The following day, the parts are buffed. If parts are washed in plain water, the dye is removed. Please advise how a good penetration of dye and fast color can be obtained. Our processes includes anodizing for 45 minutes at 40 volts.* *G.F.G.*

Answer: There are three elements in this problem. The first item to check is to be sure that your anodizing conditions are correct. From your description of the process used, it would appear that you are anodizing in chromic acid. It is usually necessary to use the sulfuric acid process to obtain good results in the dyeing operation.

Another element of your problem concerns the dye being used. Perhaps the company from which you purchase that material can advise you regarding its proper use.

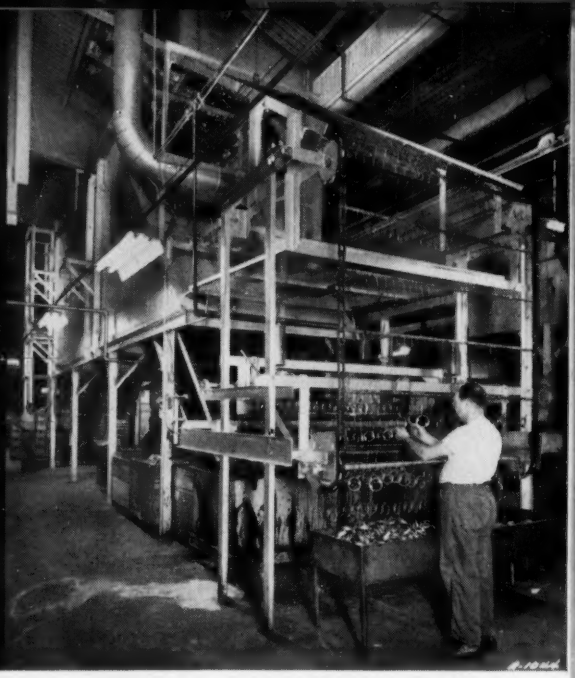
Another important consideration is that the final sealing operation be carried out in such a manner that the color is sealed in the anodic coating. Normally, articles are sealed in boiling water for the same length of time that the anodizing operation is carried out.

DO YOU HAVE A FINISHING PROBLEM?

The editorial staff of PRODUCTS FINISHING is prepared to aid you in the solution of your problem.

There is no charge for this service.

KIRK AND BLUM OVEN and FINISHING INSTALLATION



Charging end of finishing system. Parts dip quickly into paint tank then begin three passes through oven.

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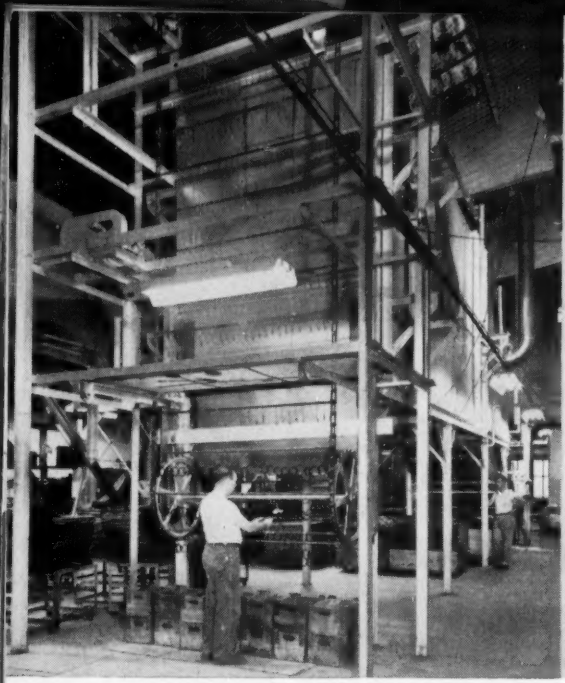

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Of particular interest is an article by J. G. Beach and C. L. Faust of Battelle Memorial Institute, Columbus, Ohio, which is entitled "Electrocladding of Reactor Materials" (pages 31-38 of the above publication). The authors state that the properties of materials

*Nuclear Engineering — Part I, published by the American Institute of Chemical Engineers in the "Chemical Engineering Progress Symposium Series," No. 11, Volume 50 (1954).

Dr. Seymour Senderoff
Supervisory Chemist,
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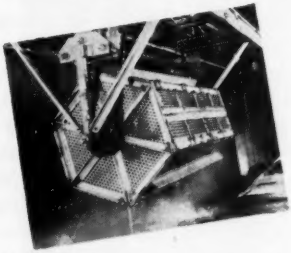

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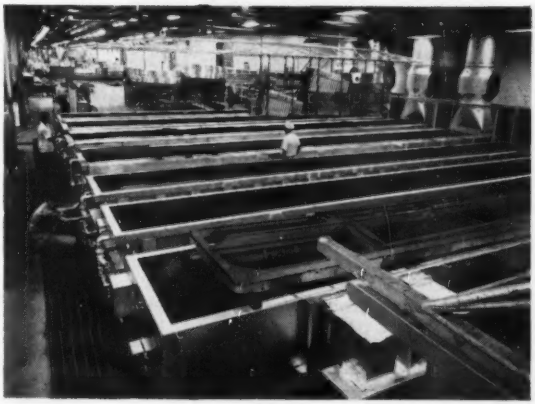

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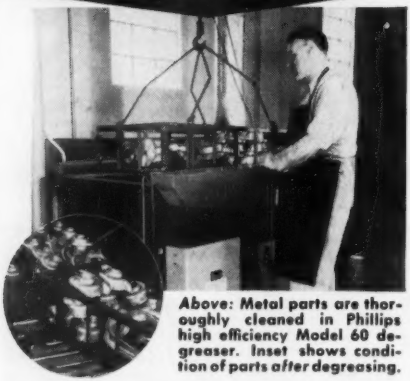

Above: Metal parts are thoroughly cleaned in Phillips high efficiency Model 60 degreaser. Inset shows condition of parts *after* degreasing.

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that are used in reactors which most frequently give rise to the need for electroplating are: (1) poor corrosion resistance, (2) tendency toward galling, and (3) difficulty in joining to other metals. Further, the properties of the materials used in reactors, and the conditions under which they are used, make the processing history of the metal on which the plating is required, and diffusion alloying after electroplating, important considerations in the success of the electroplating process. The alloying problem, while seldom encountered in ordinary commercial electroplating, is particularly important in applications to reactor materials because of the high temperatures usually encountered in their use, and as a result, the rate of alloying and the properties of the alloys formed are frequently determining factors in the choice of a metal coating.

Another important consideration peculiar to this field is that of low neutron absorption. Only low-cross-section metals, such as aluminum, bismuth, lead, and tin may be used in plating thicker than ten mils. Metals such as chromium, copper, iron, manganese, nickel, palladium, platinum, and zinc, of intermediate cross-section, may be used in thicknesses less than ten mils. For example, aluminum coatings 30 mils thick have been successfully used while the practical limit on nickel coatings is about five mils, and frequently less than one mil is all that can be tolerated.

When the thickness of the permissible plate is so rigidly limited, extreme care in the preparation of the base metal and choice of the proper plating solution is necessary in order

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to obtain maximum benefit from the electroplated coating. Iron, although it has a lower cross-section than nickel, has lower oxidation resistance and so, in general, it is less desirable than nickel as a coating. Coatings of beryllium, magnesium, zirconium, molybdenum, and titanium are desired for some applications, but satisfactory methods for producing electrodeposited coatings of these metals have still to be developed. The authors also observe that blistering caused by entrapped hydrogen is a particularly serious problem in plating on reactor materials and that frequently special steps must be devised to degas the parts.

Fig. 1—Macrograph of a section showing circumferential cracking of an extruded beryllium rod after cylindrical grinding and chemical polishing to remove ¼ mil of surface. (Magnification 4.45X).

Surface Preparation and Activation

In preparing the surface of a metal for electroplating, Beach and Faust indicate that the properties of the metal must be carefully considered in determining the procedure to be used. Because of its brittleness, beryllium must be machined very carefully. A centerless ground beryllium rod which had a surface that appeared to be entirely satisfactory was subjected to chemical polishing. After only ¼ mil had been removed, the machining cracks shown in Fig. 1 were exposed.

Satisfactory electroplating on a surface thus damaged by machining would, of course, be impossible. Uranium, thorium, zirconium, and titanium, must be ground very slowly and with adequate lubricant or coolant to prevent the development of heat-checked surfaces. Chemical polishing of zirconium has been successfully used. But chemical polishing of beryllium and electropolishing of thorium and uranium have been unsatisfactory as finishing operations prior to plating because they tend to open up subsurface defects.

Activation of the surface to be plated is an important step. The following procedures are recommended for the indicated base metals:

Aluminum: Zinc coating by immersion in concentrated sodium hydroxide solution containing sodium zincate, used at 70 to 80 deg. F.

Magnesium: Zinc coating by immersion in a solution of sodium pyrophosphate, zinc sulfate, potassium fluoride, and potassium carbonate, operated at pH 10.0 to 10.4 and 180 deg. F.

Beryllium: Same as for magnesium, but bath at pH 7 to 8. Alternatively, beryllium may be activated by anodic treatment in a phosphoric-hydrochloric acid solution, follow-

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ed by treatment in nitric acid. When activated in the latter manner, beryllium may be directly plated with copper, iron, lead, magnesium, nickel, rhodium, silver, tin, or zinc.

Zirconium: Immersion in a solution of ammonium fluoride and hydrofluoric acid. Nickel or iron may be deposited over the hydride layer thus formed, the composite heated at 400 deg. F. to decompose the hydride, and finally heated at 1300 to 1500 deg. F. to form a diffusion bond. Or, an immersion zinc coating may be applied to zirconium by immersion in molten zinc chloride at a temperature above the melting point of zinc.

It is noted that where an intermediate layer such as an immersion zinc coating is used, galvanic effects and alloying may act to limit the service of the parts.

Choice of Plating Baths

The choice of plating baths is governed largely by the chemical activity of the base metal. In the case of zirconium, which is quite passive in most solutions, the electroplating characteristics, and the properties of the deposit may be the determining factors in the choice.

Nickel Plating. Four nickel baths with the appropriate operating conditions are listed in Table I. Baths A and B of Table I are recommended for plating on aluminum, beryllium, thorium, uranium, and zinc. Their high pH makes them particularly desirable for plating on these active metals. Bath B is said to give a more ductile deposit and is not limited with regard to thickness. The nickel deposits from these baths, however,

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Table I
NICKEL PLATING BATHS

Bath Conditions	Bath A	Bath B	Bath C	Bath D
Composition:				
Nickel sulfate, gm./l.	100	145	300	300
Nickel chloride, gm./l.	—	—	50	50
Ammonium chloride, gm./l.	30	15	—	—
Sodium sulfate, gm./l.	100	—	—	—
Magnesium sulfate, gm./l.	—	75	—	—
Boric acid, gm./l.	15	15	30	30
Sodium formate, gm./l.	—	—	—	15
*XXXD, cc./l.	20	20	—	20
Hydrogen peroxide	—	—	#	—
pH	5-6	5-6	2	4
Temperature, deg. F.	100	100	140	140
Plating rate, min./mil.	80	80	30	30

*Proprietary wetting agent, Harshaw Chemical Co.
#As needed.

are somewhat porous. If an impervious coat on beryllium is required, Bath B as a strike, followed by plating in Bath D is recommended. Bath C is recommended for plating on zirconium. A wetting agent has been found to interfere with the formation of the diffusion bond and so is omitted from this bath and pitting controlled with hydrogen peroxide.

Iron Plating. Three typical iron plating baths are described in Table II. While Bath E is the best known formulation of the three, the authors report that it does not give consistently uniform pit-free iron deposits. For plating on beryllium, Bath G is recommended, while either Bath F

Table II
IRON PLATING BATHS

Bath Conditions	Bath E	Bath F	Bath G
Composition:			
Ferrous sulfate, gm./l.	—	—	300
Ferrous chloride, gm./l.	—	300	42
Ammonium sulfate, gm./l.	—	—	15
Calcium chloride, gm./l.	—	335	—
Sodium formate, gm./l.	—	—	15
Boric acid, gm./l.	—	—	15
Ferrous ammonium sulfate, gm./l.	350	—	—
*DuPonol ME, gm./l.	1	—	1
pH	4-5.5	0.8-1.5	4.1-4.3
Temperature, deg. F.	140	190+	140
Plating rate, min./mil.	20	20	30

*Proprietary wetting agent, E. I. DuPont de Nemours & Co., Inc.

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Table III
BISMUTH PLATING BATH

Bath Conditions	
Composition:	
Bismuth trichloride, gm./l.	100
Sodium chloride, gm./l.	18.5
Hydrochloric acid, ml./l.	210
Temperature, deg. F.	70 - 90
Periodic reverse	10.5 sec. cathodic 5.0 sec. anodic
Plating rate, min./mil.	33

or G may be used for plating on zirconium. The wetting agent in Bath G, however, results in a diffusion bond of lower strength than in the absence of the organic material.

Chromium Plating. The conventional chromic acid bath is used. Since chromium does not adhere well when plated directly on beryllium, intermediate layers of zinc and copper are used. To obtain an adherent chromium plate on zirconium it is necessary to apply it over an intermediate nickel or iron layer which has been diffusion-bonded to the zirconium.

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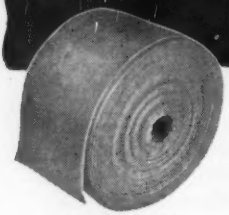

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Table IV

BOND STRENGTH OF NICKEL-ZIRCONIUM ALLOY AT VARIOUS TEMPERATURES

Temperature deg. F.	Time min.	Bond strength*
1100	240	Poor
1200	240	Good
1300	45	Good
1300	240	Fair
1500	5	Good
1500	45	Fair
1500	240	Poor

*Good bonds have a modulus of rupture of about 50,000 lb./sq. in.; fair bonds, 35,000 lb./sq. in.; poor bonds, 6,000 lb./sq. in. or less.

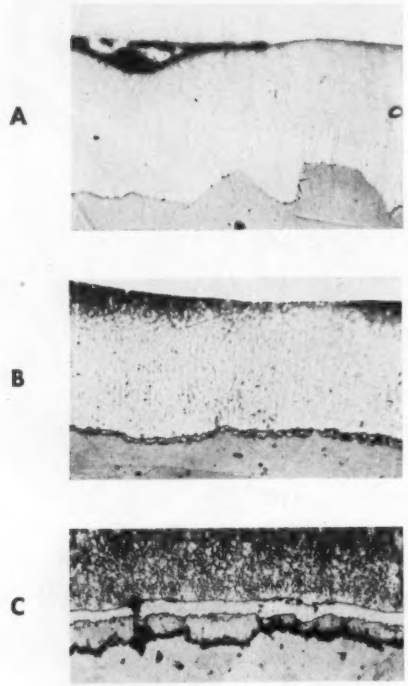

Fig. 2—Photomicrographs of nickel plate on beryllium (Magnification 200X).
(a) As plated.
(b) After 18 hours at 752 deg. F.
(c) After 18 hours at 1112 deg. F.

Bismuth Plating. Bismuth plating baths reported in the literature are unsatisfactory because of their organic constituents. Table III describes the bath recommended for bismuth plating. Aluminum is strongly attacked by this highly acid bath and therefore must be coated with an intermediate layer of about 3 mils of nickel before it is plated with bismuth. To prevent immersion deposition of bismuth on the nickel, it is desirable to immerse the nickel plated aluminum in the

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bismuth bath on the anodic part of the periodic reverse cycle.

Aluminum Plating. The authors report successful aluminum plating using the recently described ether-hydride bath.

Diffusion-Alloying of Plated Zirconium and Beryllium

Diffusion-alloying at the temperature of operation is usually undesirable, because then the system will be continually changing in use. In certain cases, however, diffusion-alloying which occurs at temperatures well above that at which the part is used may be utilized for improving the adherence of the plated coating. In the case of zirconium good adherence depends on controlled diffusion alloying. Table IV shows the effect of time and temperature of heat treating on the bond strength of nickel plated zirconium.

Iron plates require 10 to 45 minutes at 1500 deg. F. for satisfactory bonding to zirconium. With beryllium, however, diffusion alloying destroys the bond. As-plated nickel has satisfactory adherence on beryllium up to about 600 deg. F., but above 700 deg. F. rapid diffusion results in a brittle alloy layer and a weak bond, (Fig. 2). The same effect is observed in iron plated beryllium, but it does not occur until temperatures 200 deg. F. higher than that observed for nickel have been reached. (Figure 3).

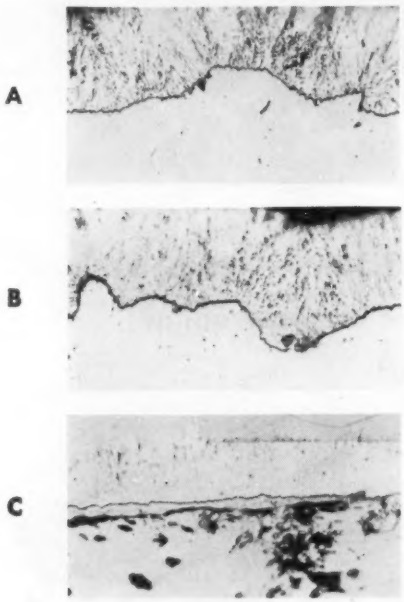
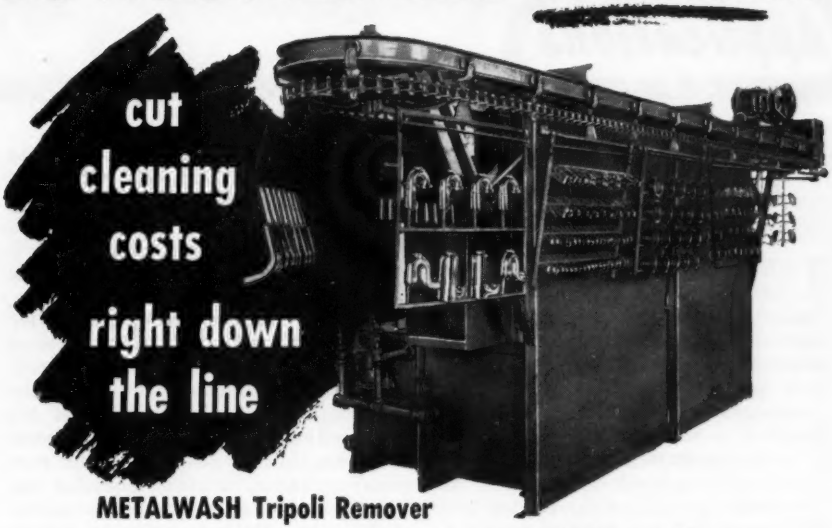


Fig. 3—Photomicrographs of iron plate on beryllium (Magnification 200X).
(a) As plated.
(b) 18 hours at 752 deg. F.
(c) 18 hours at 1112 deg. F.
(Photographs courtesy Battelle Memorial Institute, Columbus, Ohio)

Thus, properly engineered electroplating procedures can improve the usefulness of reactor metals, but problems encountered are different from those usually met in ordinary electroplating procedures.

DO A BETTER JOB FASTER...



METALWASH Tripoli Remover
cuts costs, speeds production, improves plating quality

The **METALWASH** Tripoli Remover is specifically designed for the removal of polishing compounds from metal parts prior to plating and lacquering.

Loaded racks are conveyed through the tunnel where the *complete removal* of buffing compounds is accomplished *automatically.*

Buffing compound and dirt are kept completely out of the plating equipment. Plating solutions are not contaminated – improving adhesion, quality and reducing costly rejects.

METALWASH Tripoli Removers are designed to fit into existing conveyor lines – the work is handled *on the plating racks,* eliminating all extra handling.

METALWASH VAPOR DEGREASERS *provide new speed, economy, durability;* better vapor control, coil-free tank walls, dual condensing system, and unitized water separator-pump chamber.

METALWASH SPOTLESS DRYER *eliminates hand-wiping of lacquered or plated parts.*

METALWASH PHOSPHATIZING MACHINES *provide ideal surface for lasting paint finishes.*

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WASHING PICKLING DRYING
PHOSPHATIZING DEGREASING

METALWASH MACHINERY CORPORATION
915 North Avenue, Elizabeth 4, N. J.
In Canada, Canefco, Ltd., Toronto, Ontario

Practical Applications of modern products

Automatic Machine Plates Automobile Bumpers

THE Udylite Corporation, Detroit, Michigan, has built and installed equipment designed to handle automatically the plating of automobile bumpers. Bumpers and curved parts have presented problems to the plater, and the recent Udylite installation was designed to solve them.

In the conventional straight line automatic plating machine, the work carrier enters one end of the plating tank and travels between rows of anodes to emerge from the plating bath at the opposite end.

Thus work requiring conforming anodes could be done more efficiently in a "still" tank setup where the parts were plated horizontally in nests or cells, and the plated parts moved by the overhead manually controlled electric hoists with the plater designating proper time intervals.

The Udylite machine uses a method of rack handling which allows racks of parts to remain at rest in the "nest" of conforming anodes in the cells of the plating tank for the duration of the required plating time. During the plating time, this method provides for constant operation of tanks requiring less time by selecting, in sequence, empty cells in the plating section to accommodate the racks as they emerge from the proceeding operations.

This method of operation is particularly well suited to larger parts requiring conforming anode arrangement not suited to normal automatic operation where work passes between rows of anodes.

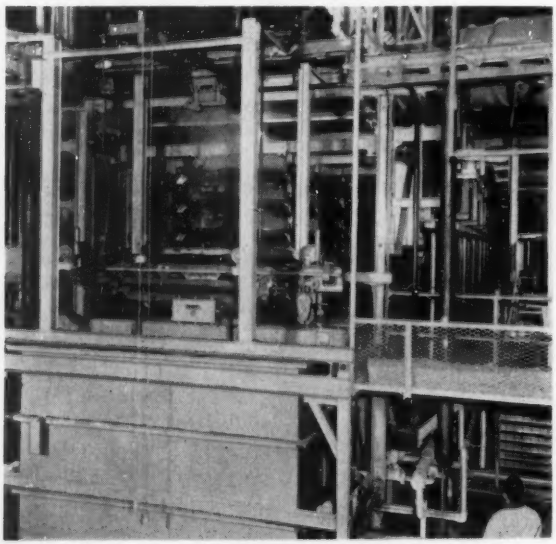


Fig. 1—A view of the Cleveland Tramrail delivering bumpers to the loading end of the fully automatic plating machine. The bumpers have just been lowered into the soak-clean tank. Bumpers in the background are being transferred to the automatic mechanism of the plating machine.

The machine, which is now in use, is 460 feet long, 15 feet wide and 18 feet high. (Figs. 1 and 2). It operates on a 2 minute cycle to plate 30 racks of 12 bumpers each per hour, to give an hourly production of 360 bumpers.

As indicated in the above description, all electrified tanks are equipped with conforming anodes forming the "nests" into which the racks of bumpers are lowered for plating. The cathode contacts on these tanks are elevated to permit work to enter the tanks "hot" (Fig. 4).

Plating Cycle

Work carriers are delivered to the machine from storage by a Cleveland Tramrail which crosses the first cell. At this point they are transferred on to the full automatic mechanism (Fig. 1). All tanks used in the machine are set in a straight line, from the first cleaning tank that starts the cycle, to the hot air blow off, which ends the full automatic cycle.

The plating cycle is as follows:

1. Load and soak clean—3 station tank, rack moves in down position through the 1st cell.
2. Soak clean—2 cell tank.
3. Warm water power spray—1 cell, empty tank, constant spray.
4. Power wash (Fig. 3)—3 cell empty tank, storage tank outside, 12 feet by 7 feet by 7 feet with 6 pumps, 3 in and 3 out, also 1 standby.
5. Cathodic clean—3 cells, using 10,000 amperes at 9 volts.
6. Cold water rinse—1 cell; continuous circulation.
7. Drain and transfer—1 cell space.
8. Acid dip—1 cell tank, Koroseal lined, continuous circulation us-

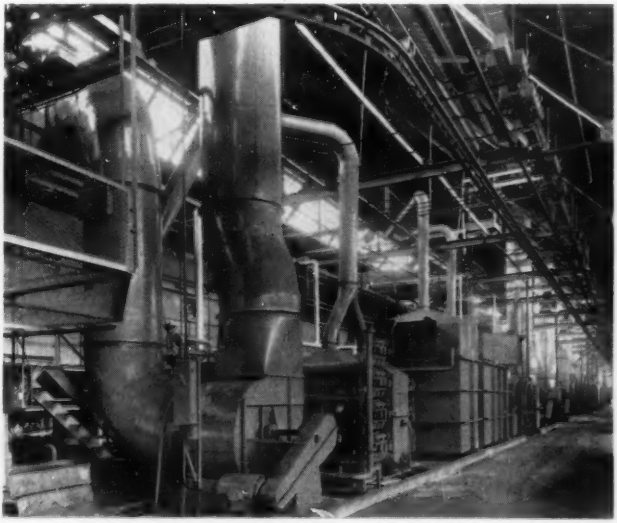


Fig. 2—A general view of the south side of the 460-foot plating machine, showing ventilating fan, heat exchangers, makeup tanks, and generators. Note the track of the conveyor overhead.

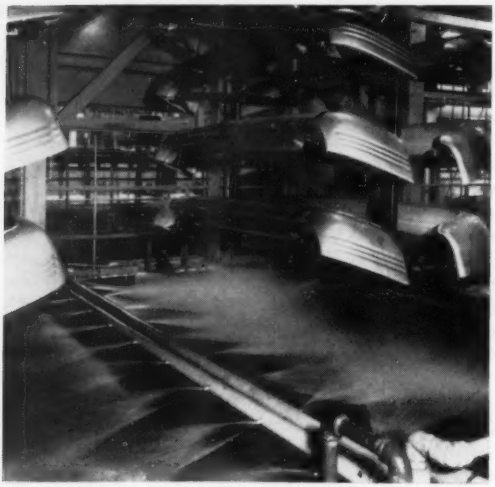


Fig. 3—Bumper bars over the power rinse section of the Udylite Full Automatic Selective Cell Machine.

ing 20 g.p.m. Durichlor pump.

9. Cold water rinse—1 cell tank, Koroseal lined.
10. Cyanide dip — 1 cell Koroseal lined.
11. Cyanide copper strike—4 cell tank, Koroseal lined.
12. Recovery rinse — 1 cell, Koroseal lined.
13. Cold water rinse—1 cell, Koroseal lined, continuous circulation.
14. Cold water rinse—1 cell, Koroseal lined, continuous circulation.
15. Acid dip — 1 cell tank, Koroseal lined, continuous circulation using 20 g.p.m. Durichlor pump.
16. Drain and transfer — 1 cell space.
17. Acid copper (Fig. 4)—two 8 cell tanks, 24,000 gallons each and 50 feet long each — Koroseal lined, air agitation, continuous circulation through heat exchangers—using 60,000 amperes at 6 volts.
18. Drain and transfer—1 cell space.

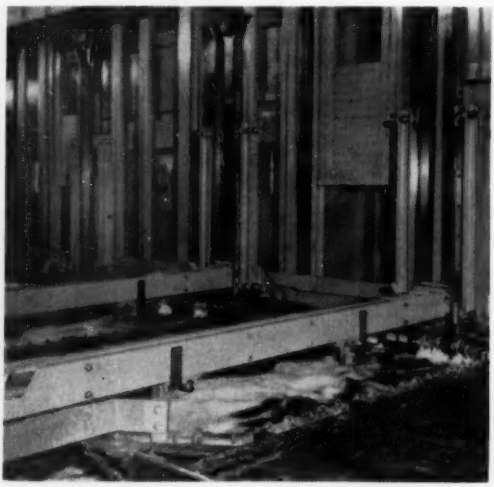


Fig. 4—Work in plating position of acid copper plating tank during bumper plating process. Note pre-contact slides in the background. These allow work to enter the machine with current on.

19. Recovery rinse—1 cell tank—Koroseal lined, continuous circulation.
20. Cold water rinse—1 cell tank, Koroseal lined, continuous circulation.
21. Cold water rinse—1 cell tank, Koroseal lined, continuous circulation.
22. Nickel strike—1 cell tank, Koroseal lined, continuous circulation through heat exchangers, equipped with nickel purification.
23. Drain and transfer—1 cell space.
24. Nickel plate—two 8 cell tanks, 24,000 gallons each, using Udylite Bright Nickel processes, 50 feet long, continuous circulation through filters and heat exchangers with 2 electro-purification tanks, Koroseal lined using 40,000 amperes at 9 volts.
25. Drain and transfer—1 cell space.
26. Recovery rinse—1 cell tank, Koroseal lined.
27. Cold water rinse—1 cell tank, continuous circulation, Koroseal lined.
28. Cold water rinse—1 cell tank, continuous circulation, Koroseal lined.
29. Acid dip—1 cell tank, Koroseal lined, continuous circulation using 20 g.p.m. Durichlor pump.
30. Cold water rinse—1 cell tank, Koroseal lined, continuous circulation.
31. Warm water rinse—1 cell tank, Koroseal lined, equipped with Platecoils.
32. Chromium plate—2 cell tank, Koroseal lined with brick bottom. Continuous circulation through heat exchangers, 2 Durichlor pumps with 1 standby—using 20,000 amperes, 12 volts.
33. Recovery rinse—1 station. Koroseal lined.
34. Cold water rinse—1 cell tank, Koroseal lined, continuous circulation.
35. Cold water rinse—1 cell tank, Koroseal lined, continuous circulation.
36. Hot water rinse—1 cell tank with

Fig. 5—A rack load of bumpers ready for the assembly line has just been picked up from the last station of the machine. *(Photos courtesy The Udylite Corp., Detroit, Mich.)*

Platecoils, air agitation.

37. Hot air blowoff—2 station tank, movement in down position with blower and air coils.

The racks coming through Station 37 are picked up and transferred to the tramrail system (Fig. 5); the bumpers to go to the assembly line and the racks through the rack strip back to the rack storage area.

The racks are carried through on the tramrail. The tramrail carrier lowers into the rack strip tank and is carried through the strip by the carrier motor. The carrier is electrified and proceeds through an 8-station strip tank. At the end it goes into an elevator where it is lifted out of strip tank and sent through the spray wash to the load station.

The water is processed through a duplex deionizing system installed by Illinois Water Treatment Co., which produces a maximum of 7200 gallons per hour.

Electro-Spray Finishing Helps Production of Washers and Dryers

From an interview with Thomas J. Snodgrass, Superintendent of Finishes, Major Appliance Division, General Electric Company, Appliance Park, Louisville, Kentucky.

MECHANIZATION and improved processing in the production of automatic washers and dryers in the modern General Electric plant, Appliance Park, Louisville, Kentucky, are evident in the finishing of home laundry units electrostatically with the Ransburg No. 2 Process.

Formerly, both the automatic washer and dryer were produced in Trenton, New Jersey. The dryer operation in the new, modern plant at Appliance Park started January 1, 1953. The complete washer move from Trenton was

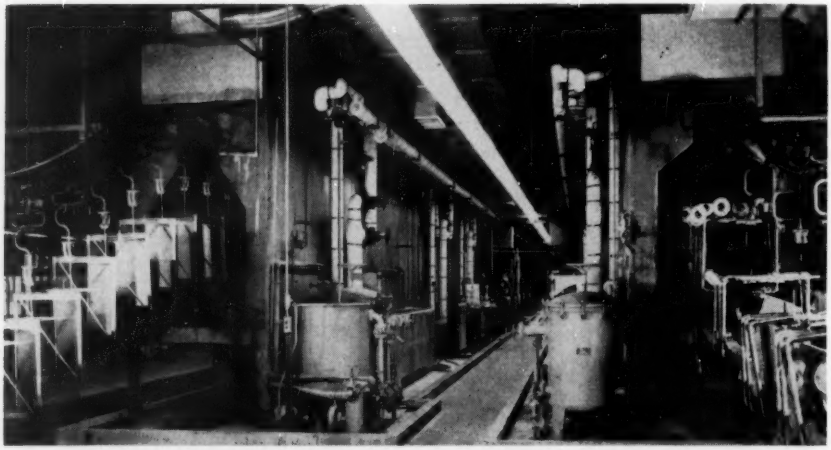


Fig. 1—General view of phosphatizing machines, showing filters and cleaner tanks, and pressurizing air duct under platform which runs the entire length of the enclosure. Duct is perforated on each side.

Fig. 2—Prime coat on appliance parts is applied by flow coating. Paint flows through aluminum nozzles.

completed in August, 1953. Early in 1954, daily production had surpassed the highest achieved at Trenton.

Paint mileage in finishing both washers and dryers has increased to a marked degree, and quality of the finish has been improved.

Painted parts for the washers and dryers are classified broadly as "white" and "black." Painted on separate lines, the white and black lines are combined going to assembly. Black parts are flow-coated.

●

Material for the conveyor line handling the white parts comes over to finishing from fabrication on two supply conveyors. Parts to be painted are loaded on a monorail conveyor. Four hours and 10 minutes elapse from the time parts are loaded on the finishing line until they are unloaded in assembly. The continuous, straight-through conveyor eliminates building of banks and, by cutting down extra handling, lessens the possibility of damaging parts in process.

First entering the cleaning and phosphatizing machines, the work to be painted on the white line goes through seven stages (Fig. 1); namely cleaning, rinse stage, second rinse, phosphatizing, rinse, chromic rinse, and deionized water wash.

After a 5 minute drying period in a steam heated tunnel at 300 deg. F., the work makes a 30 minute cooling cycle.

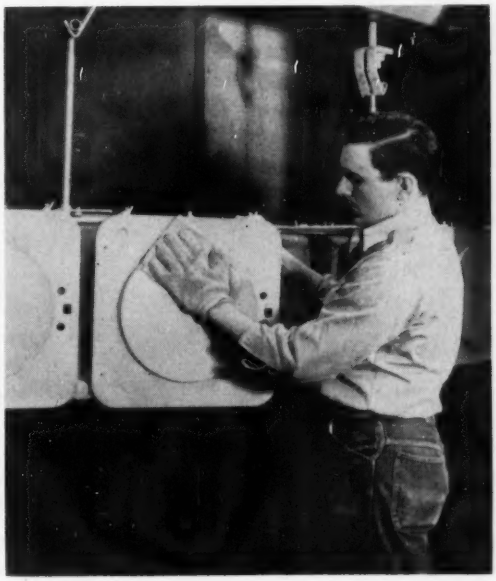


Fig. 3—Prime coated and baked parts are cleaned with a "tack rag" prior to electrostatic application of the final finish.

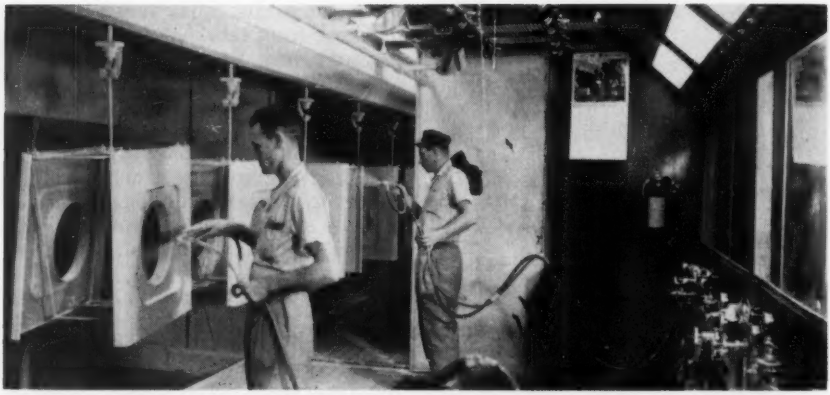


Fig. 4—G. E. appliance parts are reinforced by hand spray just prior to finish coat application by electrostatic spraying.

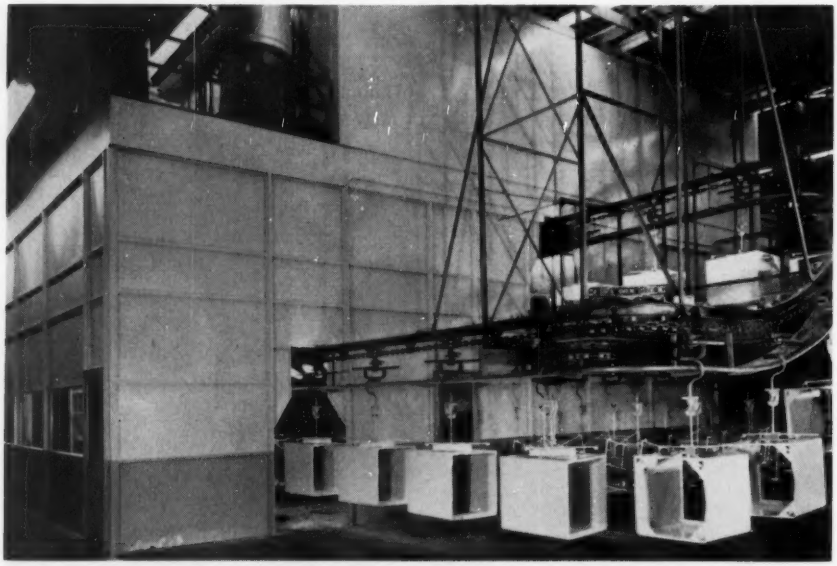


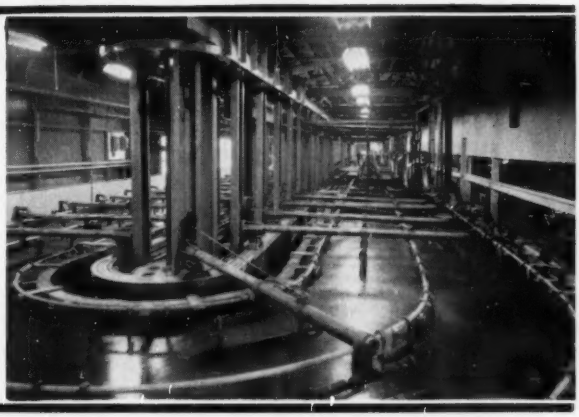
Fig. 5—A view of the front section of the G. E. paint system, showing parts entering the finish spray booths and coming out of finish baking oven above. In the left foreground may be seen the glass windows along the spray booths.

to page 74 →

Phil Virtue, pres., Virtue Bros. Mfg. Co., says:

"Wyandotte PRE-FOS and F.S. definitely clean metal better . . . at lower cost!"

In largest plating machine on West Coast, Virtue Bros. electrocleans steel parts with Wyandotte F.S. An exceptional detergent, F.S. gives fast, complete wetting action and controlled foaming. To clean and phosphatize steel parts perfectly for painting, Wyandotte PRE-FOS is used in a spray washer.



Virtue Bros. Mfg. Co., Los Angeles, Calif., is the West's largest producer of chrome and black metal dining furniture. Like many makers of metal products, this company prefers Wyandotte F.S.* for metal cleaning prior to plating, and PRE-FOS* for metal cleaning and phosphatizing prior to painting, because *Wyandotte products provide excellent cleaning at lowest use-cost.* Virtue Bros. is well pleased, also, with the services of Wyandotte's skilled technical staff.

Wyandotte offers a performance-proved line of metal cleaners, phosphatizers, paint strippers, and related products. If you have a metal-cleaning problem—or would like to see how Wyandotte products can improve your operation and, at the same time, cut costs—call your Wyandotte representative or jobber today! *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California.* *REG. U.S. PAT. OFF.

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Sheppard Diesel

In the R. H. Sheppard plant, Diesel tractors are coated with Pittsburgh's synthetic primer and then re-coated in 30 minutes with Pittsburgh's alkyd enamels which set up so rapidly that trim enamel and decals can be applied one hour later.

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Farm Tractors *are Finished with Special Pittsburgh Enamels*

Pittsburgh contributes to the eye appeal and long life of many agricultural implements —such as the Diesel farm tractors made by the R. H. Sheppard Company, of Hanover, Pa.—by providing special enamels of unusually high quality for these products.

The protective coatings for these tractors must be extra tough and durable. Probably no other type of equipment is subjected to such a wide variety of conditions. These finishes must resist the rigors of severest weather. They must withstand the corrosive effects of fertilizers, manure and spraying compounds.

As the result of working closely with leading producers of farm machinery for many years, Pittsburgh has developed special alkyd synthetic enamels which retain their high gloss and color and are remarkably long-lasting. These finishes can be applied with unusual speed, saving time and money.

Pittsburgh's wide experience in this and many other industrial fields, may be helpful in solving *your* finishing problems. Wire, write or phone the Pittsburgh Paint plant nearest you. We'll be glad to have one of our engineers discuss your requirements with you, without cost or obligation.

PITTSBURGH PLATE GLASS CO., Industrial Paint Div., Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N.J.; Springdale, Pa.; Atlanta, Ga.; Houston, Texas; Torrance, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Michigan. Thresher Paint & Varnish Division, Dayton, Ohio. Forbes Finishes Division, Cleveland, Ohio. M. B. Suydam Division, Pittsburgh, Pennsylvania.

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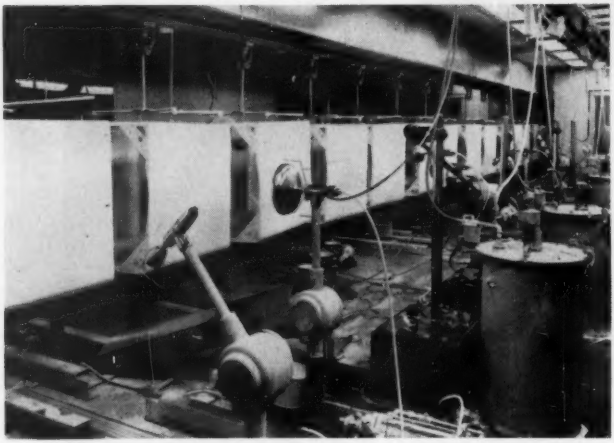

Fig. 6—A view of the electrostatic spray booth where 1-1/3 mil finish coat is applied with Ransburg No. 2 Process equipment.

●

It is then primed by flow-coating.

Two-position racks are used for most of the parts to accommodate flow-coating and electrostatic applications.

Sides and bottoms of the cabinets are sprayed with nozzles in the flow-coater (Fig. 2). The work then goes through a drip tunnel. Thirty minutes after baking, the work goes to the prime sand area where prime defects are sanded out. The work is repositioned automatically from 48 inch to 36 inch centers for electrostatic paint application. Inner and outer appliance doors are grouped at 40 inch centers. Before entering the finish paint area, dust is blown off and outside surfaces get the "tack rag" treatment (Fig. 3). Two hand sprayers in a water wash booth reinforce some irregularly shaped sections and bracing before work enters the electrostatic spray booth (Fig. 4).

Visitors in the finishing department

●

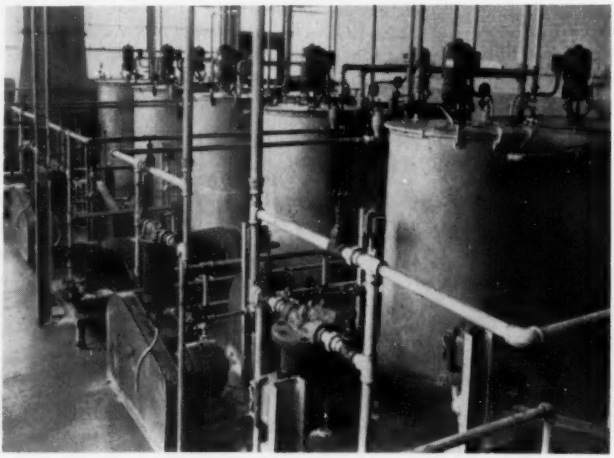

Fig. 7—A view of the central paint mixing and circulating tanks and pumps. Here, paint is adjusted to proper consistency, mixed, and pumped to spray booths and flow-coaters through the distributing pipes.
(Photos courtesy General Electric Co., and Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.)

New Singleton "H-T Sincolite" Test Cabinet

Built to meet all U. S. Government Specifications for Accelerated Corrosion Testing

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at Appliance Park often make the remark, "It's like painting in a show case." Sparkling windows line the entire length of the 44-foot electrostatic spray area. Absence of overspray on the windows attests to the efficiency of the painting equipment. Here, in the electrostatic spray area, there are two Ransburg No. 2 Process triple heads used on either side of the conveyor line. And, two triple heads at a lower level coat the underneath surfaces of the cabinets. No compressed air is used in the Ransburg No. 2 Process units. Atomization occurs under the influence of the electrostatic field, producing a spray pattern of electrically charged particles. The attraction of the field pulls the spray to the moving parts which are grounded electrically on the conveyor.

A 1-1/3 mil finish is applied (Figs. 5 and 6) in a double pass, with a 1-minute flash-off between. There is a 5-minute flash-off before the pieces travel into the electric oven for baking at 320 deg. F. for 36 minutes. After baking, the finished parts travel to the finish inspection station; they are then transferred with the black parts to the assembly conveyor line.

Galvanizing Company Boosts Efficiency in New Plant

QUICK Industries, Inc., has substantially increased efficiency while cutting costs in a new galvanizing plant. Key to the saving is better handling methods and the modern production

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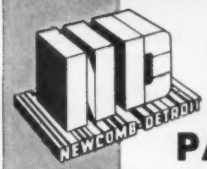

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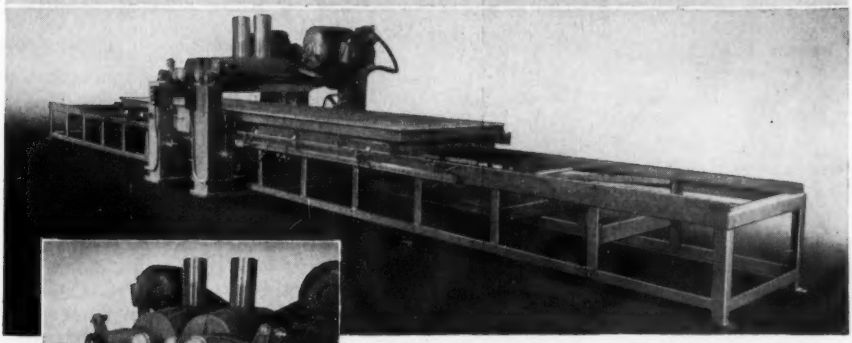
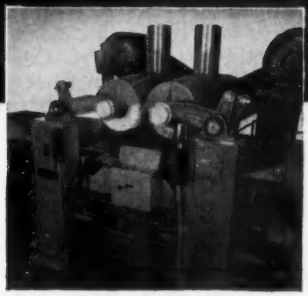
Cut Time! Cut Finishing Costs! with CENTRAL *Tandem Roll* POLISHING MACHINES





FEATURES

1. Central Push Button Control
2. Hydraulic Contour Control
3. Tandem Rolls for faster cutting and finishing
4. Two operations at one work set-up
5. Stepless adjustable stroke, 2" to full capacity
6. Machines made to any length
7. Table can be oscillated sidewise at the will of the operator.

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Many pieces such as electric, gas or oil range tops with side concave or convex moulding can be handled by incorporating auxiliary polishing rolls. These machines are rugged steel fabrications and powered with motors of ample capacity. They are electro-hydraulic or hydraulic controlled from a central operator's station, simple to operate, safe, effective and highly efficient.

These new Central Machines are — to the best of our knowledge — the ultimate in performance, economy and low initial cost. Firms operating these polishing machines for the past three years tell us our H-M Series Machines have paid for themselves in 8 to 12 months' time.

Tandem Roll Machine awarded A. I. M. Award of Merit for 1954.

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line layout of the new plant (Fig. 1), which was worked out by the company with the assistance of Hanson-Van Winkle-Munning Co., Matawan, N. J. Output runs between 2500 and 3000 pounds an hour. Six men handle this production, and the task includes pick up and delivery of work.

At present, Quick Industries is adding a second galvanizing kettle to its production line. With an area of 7200 square feet, the plant will have a potential capacity of 8000 pounds per hour, and will require the addition of four more operators.

In operation, work is trucked from nearby customer installations to the plant in company owned trailers. Electrically operated hoists pick up the work from the trailer and carry it on a monorail to a series of preparation tanks and on to the galvanizing kettle (Fig. 1).

Parts handled at the plant include 12 to 16 gauge mild steel sheet assemblies, pipe coils, pole line hardware items, water tanks and some structural steel units.

Work is not unloaded from the trailers until it is ready for processing. With its handling system, Quick Industries has almost eliminated intermediate storage, always a production-delaying problem in this type of work. Consequently, work can be taken from the trailer and put through the entire process without touching the ground, a factor that has contributed considerably to better production standards.

With the inline arrangement of the 22-foot-long processing tanks and the conveyor arrangement, Quick Industries has two galvanizing production lines with only one set of preparation tanks.

There are 11 electric hoists in the shop, and each can handle at least one ton of material. At the galvanizing kettle, a jib crane with air hoists is used for withdrawing work from the molten zinc bath. Besides this, an electrically operated emergency reel is located at the kettle. It can be swung into position in

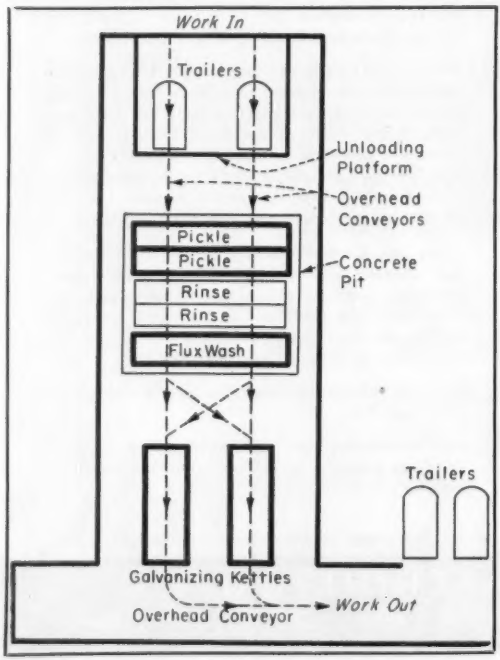

Fig. 1—Diagram showing plant layout in new galvanizing plant.

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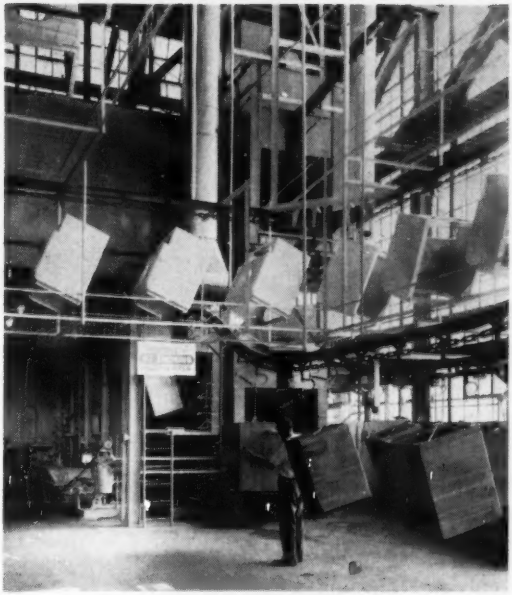

If your product is now being sprayed or dipped, you should be first to investigate the money-saving advantages of "Flow-Coating by KOCH"—a concept of product finishing now being increasingly employed by plants large and small, regardless of production rate.

Consult KOCH flow-coating experts now and learn how it can be profitably adapted to your present set-up. The entire system, from layout through installation, is handled by KOCH under a single responsibility contract that assures you of peak efficiency at lowest possible cost. Get more facts about "Flow-Coating by KOCH." WRITE FOR BULLETIN 44!

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GEORGE KOCH SONS, INC.

EVANSVILLE, INDIANA

Fig. 2—Metal preparation tanks for the Quick Industries' galvanizing operation. Two blower fans with capacities of 20,000 C.F.M. ventilate the installation. Electric heaters on top of overhead electric supply rails are used to prevent condensation of moisture on electrical contacts.

the event of failure of the regular hoisting equipment.

Allen T. Baldwin of Hanson-Van Winkle-Munning Co., a well-known expert in the field of hot dip galvanizing, worked with the company in planning the layout and making the installation.

Galvanizing Process Details

Preparation steps in particular are efficient. While many galvanizers use only one pickling tank, Quick Industries has installed two. The principal advantage is that this permits constant flow of work through the processing line. As acid becomes spent in one tank, the second tank can help out by sharing part of the production load or can take on the full load while the first bath is being replenished.

Pickling is done in a sulfuric acid bath (5 to 7 per cent acid by volume) at 160 deg. F. Quick Industries will usually discard the bath when iron concentration exceeds 4 per cent.

Work coming out of the pickling bath is immediately dipped into an adjacent rinse bath, and then into the sec-

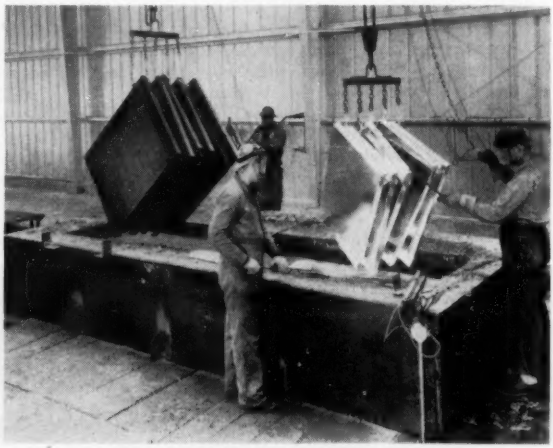
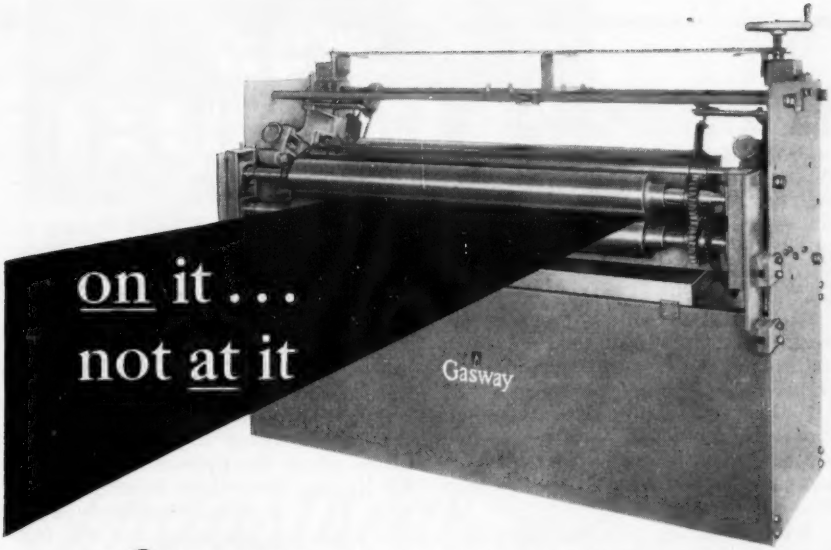


Fig. 3—Load of parts at left is being lowered into molten zinc. Operator at right has just removed a load of galvanized parts from the bath.
Illustrations courtesy Hanson-Van Winkle-Munning Co., Matawan, N. J., and Quick Industries, Jackson, Mich.



GASWAY ROLLACOATING puts the finish on the work...not in the air

Finishing flat sheets and panels by Gasway ROLLACOATING puts the paint right where it belongs—on the work. No overspray, no overflow. You breathe easy while ROLLACOATING does the finishing.

Gasway ROLLACOATING precisely meters the amount of finish laid down. And *all* this finish goes where you want it. Film thickness is held constant within a tenth of a mil. Every piece is finished perfectly—just like the one before. Baking is always uniform. ROLLACOATING cuts paint costs one-third or more, because you use all the finish you pay for.

Compare other finishing methods with the speed, quality, and economy of easy Gasway ROLLACOATING. Write for all the facts.

Gasway makes a complete line of machines for roll-finishing flat sheets and panels up to 72" wide, and the only completely integrated continuous cleaning-treating-finishing-baking lines for flat strip and webs.

Gasway CORPORATION

6463 NORTH RAVENSWOOD AVENUE, CHICAGO 26, ILLINOIS

ond rinse bath. The second rinse bath is an efficiency and safety matter, to prevent subsequent contamination. Water is introduced to the second rinse bath first, then passes to the initial bath. As a result of these precautions and care in fluxing, the final zinc coatings show improved appearance and physical characteristics.

After rinsing, work is given a flux wash, which deposits a rust retarding coating. This flux wash is made up of Hanson-Van Winkle-Munning's No. 20 L.F. Flux, and kept at 12 to 15 degrees Baume and 140 deg. F. This solution is heated with a lead coil using steam, and the temperature is controlled with Powers regulators.

A large concrete pit about 4 feet deep houses the four preparation tanks (Fig. 2). Compartments have been made in the pit, and are used for the pickling, flux wash tanks, and installation of two ¼-inch steel rinse tanks. Concrete forms in which the various preparation tanks are constructed have a bottom 11 inches thick; risers are 6 inches wide at the top and 10 inches wide at the bottom. Each tank is 22 by 6 by 5 feet deep. Walls and bottoms of the pickling and flux areas are covered with a mastic coating and lined with acid resisting brick.

After completion of the preparation, work is conveyed to the galvanizing tanks, where the process is completed by dipping the articles in molten zinc (Fig. 3). The galvanizing kettle is 13 feet long, 3½ feet wide, and 5½ feet deep. Contributing to the improved results are the new automatic temperature controls that regulate natural gas fuel supply for the galvanizing kettles. One pyrometer control maintains the kettle at 850 deg. F., the proper working temperature; a second system becomes operative at 880 deg. F., and will prevent any excessive heating.

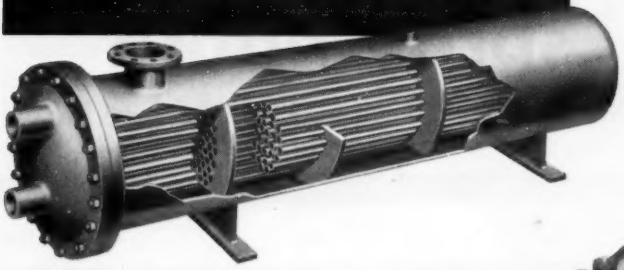
DETROIT "TAC" RAGS
GIVE APPLIANCES THAT
"MILLION DOLLAR LOOK"
DETROIT
HANDY
"TAC"
RAG
PICKS UP DUST
LIKE A MAGNET
DETROIT "TAC" RAGS are an absolute necessity for cleaning any metal, wood or plastic surface before painting. Removes all dust, lint and sanding particles.
Order today through your supplier.
STANDARD OF THE FINISHING INDUSTRY SINCE 1934
DETRO MFG. & SALES CO., INC., CULVER CITY, CALIFORNIA

Absolute Control of Chromic Acid Mist —By C. Hama and W. Fredrick, Sc.D., Detroit Department of Health, and D. Millage and H. Brown, Ph.D., The Udylite Corporation. Reprinted from American Industrial Hygiene Association Quarterly, September, 1954.

This report, available from The Udylite Corporation, Detroit 11, Mich., discusses a surface active agent produced by the Udylite Corp., known as "Zeromist," in relation to control of chromic acid mist from chromium plating baths. Results of air sampling determinations in plating plants under various conditions are given, and experimental evidence is cited to show the value of this compound in improvement of bath efficiency and reduction of air pollution.

HEAT EXCHANGERS

for
CORROSIVE
and
NONCORROSIVE
LIQUIDS
and
GASES



Industrial tailored units

Whether for laboratory or pilot-plant requirements or large-quantity processing, it will pay you to look into the INDUSTRIAL tailored units for heating or cooling liquids or gases. Rather than adaptations of standard units, INDUSTRIAL heat exchangers are engineered and built to individual performance specifications. Depending on size and other operating conditions, the INDUSTRIAL heat exchanger may be a large single- or multiple-pass tube-bundle type or a series, parallel, or series-parallel combination of individual single- or multiple-tube units. In any type unit, thermal shock and the requirements of the corrosive or noncorrosive fluid on the tube or shell side determines the materials of construction. Thus, each INDUSTRIAL tailored heat exchanger embodies the ultimate in operating performance and efficiency at lower initial and maintenance costs.

This Bulletin describes the INDUSTRIAL service on heat transfer equipment.
Ask for Bulletin 600-2.

Get INDUSTRIAL'S recommendations for your next heat transfer equipment.

5058

INDUSTRIAL
FILTER & PUMP MFG. CO.
5904 Ogden Avenue • Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
HEAT EXCHANGERS
CORROSION TEST CABINETS
CENTRIFUGAL PUMPS

ANNOUNCING . . .

a new LOW COST water wash spray booth by Binks

Check these 9 money-saving features:

1. **Fan stays cleaner longer.** Virtually all pigment is removed from exhaust air.
2. **Easy access.** Fan and arrestor plates are reached through doors in back of booth. When booth is installed against a wall, access doors are placed in front and lower section of water curtain is easily removed.
3. **No moisture reaches stacks.** Staggered metal arrestor plates trap moisture entrained in the exhaust air.
4. **Unbroken water curtain.** Binks special clog-proof Dynaprecipator manifold distributes water uniformly.
5. **Double washing.** Paint fumes and overspray must pass through 2 washings before they leave the booth.
6. **Stays clean longer.** The water curtain is constantly flushed.

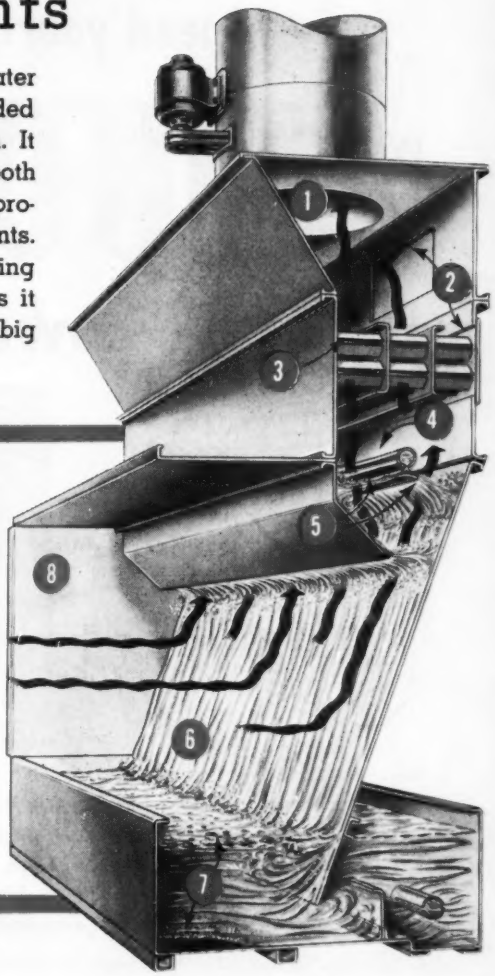
LET US ANALYZE YOUR NEEDS

Without obligation a Binks engineer will gladly call at your office to discuss the advantages of this new booth or to help you with spray painting problems of any kind. Just contact your nearest Binks office or write direct.

ASK ABOUT OUR SCHOOL. **A week of training in best finishing methods, equipment selection and maintenance. No charge for tuition. All welcome. Write for class dates and curriculum.**

Ideal for use in most plants

This new low-cost Style D water wash spray booth is recommended for normal industrial production. It supplements the Style DUC booth which is unequalled for heavy production and hard-to-handle paints. But the powerful double washing action of this new booth makes it ideal and fully approved for the big majority of spray painting installations.



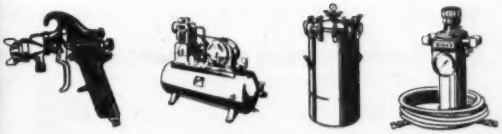
7 **Overspray reclaimed.** Overspray is washed into the water pan where it is trapped for easy removal or reclamation. This minimizes paint sludge reaching the circulating pump.

8 **Rigid, long-life construction.** Engineered to give long, trouble-free service.

9 **Economical.** Costs less, uses less electricity, occupies less floor space, requires less maintenance.

BINKS MANUFACTURING CO.
3118-40 Carroll Avenue
Chicago 12, Illinois

Binks
EVERYTHING FOR SPRAY PAINTING



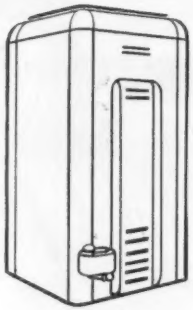
GUNS • COMPRESSORS • FLUID TANKS • EXTRACTORS & ACCESSORIES

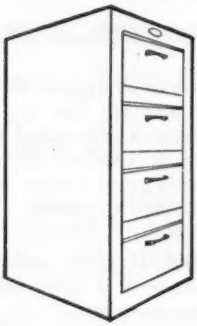
REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

Speed your production as this

with new DUOTONE

by Lowe Brothers





A large manufacturer of theater seats wanted to step-up production of seat backs by eliminating back-tracking and double-handling in the finishing process. Lowe Brothers "Finishing Specialists" developed an amazingly fast spraying, solid covering (one coat!), quick setting enamel for his product. Besides greatly speeding the flow of finished parts, this sensational new finish—*Duotone Enamel*—provided the best looking, longest wearing, most economical finish this manufacturer had ever used!

New *Duotone* Enamel is the ideal finish for a broad range of sheet metal products. It gives maximum beauty and wearability, yet keeps finishing costs at a minimum! ⇨ ⇨ ⇨

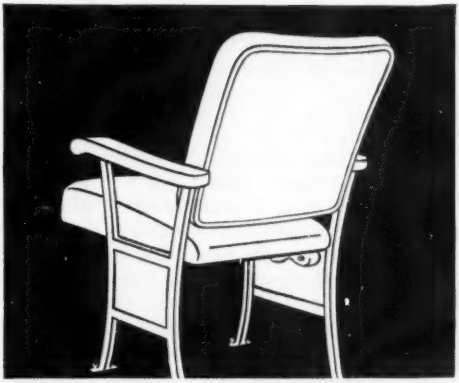
This advertisement is based on facts from Lowe Brothers Case History files.

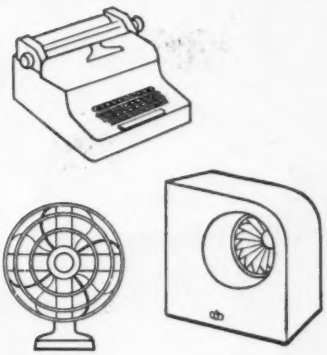
ENGINEERED QUALITY

manufacturer did...

ENAMEL

Extremely fast baking! Amazingly tough!





Check these important Duotone Enamel features • Dries in 15 minutes at 300° in a conventional oven—and in 8 minutes under infra-red! No orange peel! • Available in any degree of gloss—wide color choice. • It's a modified alkyd resin type enamel. • Sets a new standard for wearability! Practically impossible to mar or scratch! • Resists perspiration and skin oils. • *Duotone* keeps material cost to a minimum! Just one coat (only ½ mil thick) covers bare metal surfaces perfectly with an adequate protective film . . . *Duotone may save you plenty in 1955! You pay nothing to find out. Write today for the full story.*

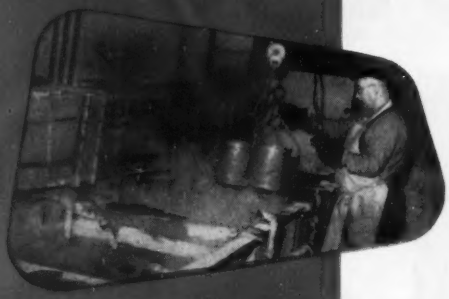
The Lowe Brothers Company • Dayton 2, Ohio • Industrial Division

District Offices: Atlanta • Boston • Dallas
Chicago • Jersey City • Kansas City

LOWE Brothers

FINISHES FOR INDUSTRY SINCE 1870

POLISHING



CLEANING

PLATING

FINISHING

New • EQUIPMENT • MATERIALS • PROCESSES

Barrel Finishing Compound

A barrel finishing compound designed to produce smooth finishes on light metal die castings has been announced by Minnesota Mining and Manufacturing Co.

Called "Honite Micro Cut," the compound is recommended for use on die castings of zinc, aluminum and other light metal alloys.

The compound will remove light machine marks and leave a fine surface finish, with a minimum of stock removal, avoiding deep scratches and exposure of porosity in castings, it is claimed.

The smoothness of the surface produced by the compound, which contains a very fine mineral grain, improves the quality of subsequent plating and ball burnishing operations, according to the manufacturer.

For further information contact Minnesota Mining and Manufacturing Co., Dept. PF-114, St. Paul 6, Minn., or circle No. 1 on Reader Service Card inside back cover.

Rotary Spray Painting Unit

A Binks Rotary Spray Painting Unit for use on flatware has been announced by Binks Manufacturing Co. The rotary spray machine consists of four rotating arms mounted on a revolving vertical spindle. An automatic spray gun is mounted on each of the four arms. The guns travel in a circular path above the conveyor. The diameter of the circle traveled by the

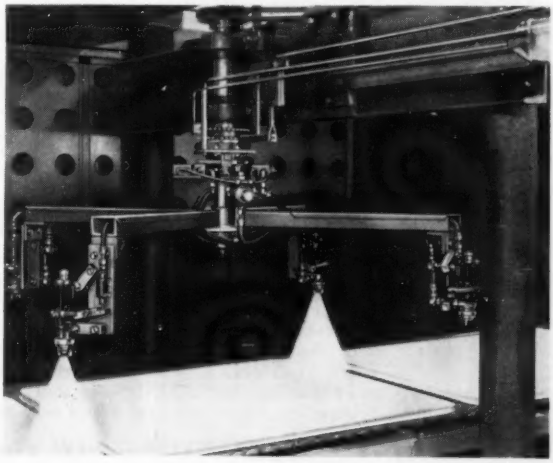
spray guns is approximately 24 inches wider than the maximum width of the ware to be sprayed.

The guns operate only when they are directly over the ware. Each gun turns on automatically when it approaches the edge of the product and shuts off as it leaves the product. The area sprayed can be varied by adjusting the machine while it is in operation.

This machine can apply coatings at extremely high conveyor speeds; the amount of finish applied to the surface can be closely controlled by varying the speed of the rotary head, which is done easily with a precise variable speed drive.

In many cases the mounting channel, spray guns and motor of the standard Binks Automotive Reciprocating Machine can be used in the Rotary Spray Painting Unit.

For further information regarding this unit, write to Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill., or circle No. 2 on Reader Service Card inside back cover.



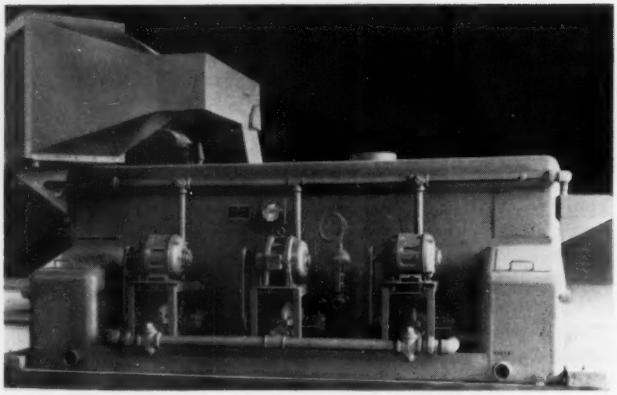
Binks Rotary Spray Painting Unit

Parts Cleaning Machine

A metal cleaning machine for mass production cleaning of valve rocker arms has been installed by a Michigan auto manufacturing division. In less than 120 square feet of floor space, the machine soak washes, spray washes, rinses and dries up to 84 cubic feet of metal per hour.

Basically, the machine is a 30-inch diameter hopper-loaded horizontal drum with a 5-inch high internal worm which transports the parts through the various operations. Since the drum rotates at 3 R.P.M. and the worm has a 9-inch pitch, parts progress through the machine at 27 inches per minute.

The first 18-inch section of the machine is a soak wash, in which the parts



Valve Rocker Arm Cleaning Machine. This machine is equipped with three pumps. The center pump is an auxiliary unit.

are tumbled in hot cleaning solution. Following this, parts go through an 84-inch section where they are sprayed with hot cleaning solution and allowed to drain. The next section is a spray rinse and drain section 48 inches long. The final portion of the machine is a 54-inch hot air blow-off. Here parts are subjected to a continuous hot air blast, which strips them of excess solution and allows them to dry from accumulated heat. In all sections, the parts are tumbled, exposing all surfaces to the cleaning and drying action.

In overall dimensions, the machine is 19½ feet long, 6 feet wide, and 9½ feet high. Further details on the machine may be obtained by writing Cincinnati Cleaning & Finishing Machinery Co., Inc., 2008 Hageman St., Sharonville, Ohio, or by circling No. 3 on Reader Service Card inside back cover.

Vinyl Base Wrinkle Finish

A wrinkle-finish coating with a leather grain texture is based on Bakelite vinyl resins. Wear tests show the new coating, known as "Armorhide," has excellent abrasion resistance. The spray-on method of applying the patented textured coating was developed by John L. Armitage & Co., Newark, N. J., with vinyl resins supplied by Bakelite Company. Durable finishes for business machine housings, interior panels of automobiles (Fig. 1) and many other metal surfaces subjected to constant wear are made attractive with the deep grained texture of the coating.

Perspiration, oil smudges, grease,

POCKET **HANDI-GAGE**

A MAGNETIC THICKNESS TESTER

for electrodeposited, hot-dipped and painted coatings on steel. No bigger than a fountain pen, but what a job it does! Tests plated, painted, enameled, or plastic laminated coatings in SECONDS—in the lab or on the production line. Accurate, quick and easy to use.

Platers Research CORPORATION

59 EAST 4TH STREET — NEW YORK 3, N. Y.

Economical . . . clean . . . easy to apply—Stuart's New Excelene Grinding and Polishing Oils improve surface finish and increase belt life production as much as 50 to 100% on many abrasive belt grinding and polishing operations. Two types of Excelene, FD for ferrous metals, and NF for non-ferrous metals, are available from your abrasive belt distributor in easy-to-use 12 oz. pressurized cans.

It's easy to spray production on your abrasive belts with Excelene. Here's an example.

An aluminum cooking utensils manufacturer was getting 75 pieces per belt with grease stick lubrication—and using four gallons of solvent per operator each day to clean the belts. Excelene NF Polishing Oil not only kept the belt clean but increased belt life to 135 pieces each.

Call your abrasive belt distributor today—or fill out the coupon at right.

More than a "Coolant" is Needed

D. A. Stuart Oil Co.
EST. 1865 LIMITED

For further information on
STUART'S EXCELENE

Clip to your company letterhead and mail to:
D. A. Stuart Oil Co., Ltd.,
2755 S. Troy St., Chicago 23, Ill.

Name_____

Title_____

Name of your Belt Distributor_____

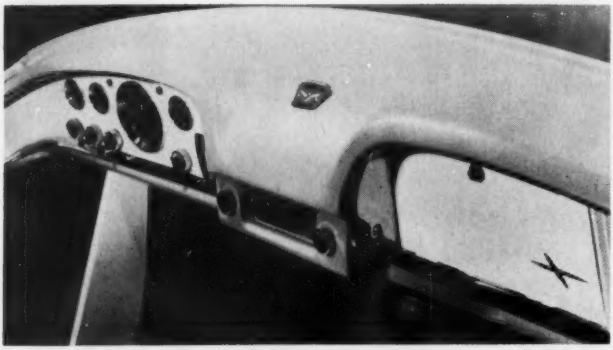


Fig. 1 — Armorhide Wrinkle Finish is used to finish instrument panel of 1955 DeSoto.

water and most chemicals are wiped off without leaving stains, due to the excellent chemical resistance of Bakelite vinyl resins on which this coating is based. The textured finish is applied over a thin coat of a specially formullated metal conditioner also based on Bakelite vinyl resins to obtain strong metal adhesion. This conditioner is sprayed on either steel or aluminum and allowed to dry from 30 seconds to 5 minutes. Armorhide is then sprayed on to any desired film thickness from 0.002 to 0.015 inches and dried for 30 seconds. A texturing agent is then applied by spraying and the completed system is baked for approximately 15 minutes at 350 deg. F. to form a wrinkle finish (Fig. 2). Particles of Baketlite vinyl resin fuse into a continuous film at this temperature.

For further information, write John L. Armitage & Co., 245 Thomas St , Newark 5, N. J., or circle No. 4 on Reader Service Card inside back cover.

Fig. 2—Panel of Armorhide vinyl resin-based wrinkle finish.

PAINT MIXER
MIRACLE PAINT REJUVENATOR
All paint restored to original consistency without opening the can.
2 minutes per gallon.
MIXERS AVAILABLE
¼ PT. to 55 GALS.
MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.
5 GAL. MODEL

Corrosion Test Cabinet

A redesigned test cabinet for corrosion testing of finishes and coatings has been announced by the G. S. Equipment Co., 5321 St. Clair Ave., Cleveland 3, Ohio. The Singleton cabinet is made of "H-T Sincolite," a transparent, non-porous material, which allows clearer visibility during tests without

ACME Automatics

FOR HIGH PRODUCTION at LOW COST on

POLISHING and BUFFING • DE-BURRING
WIRE BRUSHING and MICRO-FINISHING

• Proved performance and dependability in industry for half a century

RECOMMENDATIONS and QUOTATIONS

• *We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.*

CATALOGS ON REQUEST

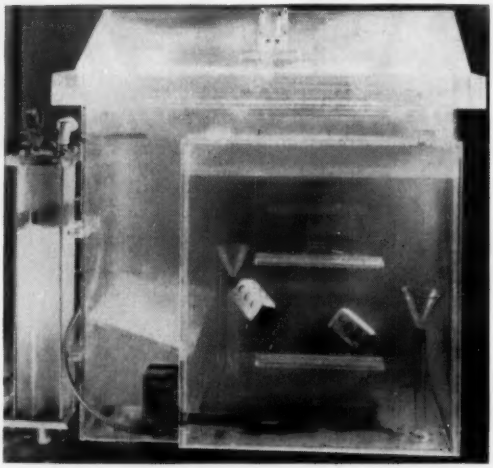
ROTARY STRAIGHT LINE SEMI-AUTOMATIC AND SPECIAL *Polishing and Buffing Machinery*

SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

ACME Manufacturing Co.

1400 E. 9 MILE RD., DETROIT 20 (Ferndale) MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY



Singleton Test Cabinet provides clearer visibility.

interrupting the process or handling the specimens. This is especially advantageous in conducting short tests.

Water jackets located in front and in the rear house the 2 heaters. This helps to maintain uniform temperatures and eliminates the danger of "hot bottom," which would ordinarily cause vaporizing of contaminated condensate on the floor of the cabinet.

The Singleton Cabinet is built to meet all existing A.S.T.M. and U.S. Government Specifications for this type of equipment. H. T. Sincolite, the material used in its construction, is inert to test solutions and thus prevents any secondary galvanic acceleration of corrosion. Fusion-welded construction provides permanent, no-leak seams. No material subject to corrosion is in contact with the vapors or test solutions, and all controls are located on the outside of the cabinet.

For further data circle No. 5 on Reader Service Card inside back cover.

IS
YOUR
PROBLEM
BURNISHING?
HOLLAND SUGGESTS:
Motor Driven Tilting Tumbling Barrels for cleaning, polishing, grinding, deburring, sanding, burnishing and various other applications.
WRITE for New Holland Equipment Catalog
J. HOLLAND & SONS, INC.

Hydraulic Jack

Development and production of a 20-ton hydraulic jack for surface finishing applications has been announced by Clair Mfg. Co., Inc., Olean, N. Y.

This arbor press was designed specifically to mount wide-faced buffs on long spindles. The Clair Model L was developed in answer to the need for an arbor press that will automatically hold a long spindle in perfect alignment during the loading operation. This has been accomplished by means of an upside-down version of a conventional arbor press. The hydraulic

UNITED CHROMIUM OFFERS...

for eye appeal...
for protection

Plastisols

that make unique sales-winning finishes

Unusual resistance to abrasion and chemicals... rich, satin lustre... chip-proof resiliency... thick or thin build-up on the product... and seam-free, pore-free corrosion protection... this whole, unique combination of properties is delivered by Unichrome Plastisol Coatings.

A pioneer in the field of vinyl plastisols, United Chromium has developed many compounds to suit special needs. Types now include practical sprayable Unichrome 5300 Series Coatings which deliver films up to 25 mils in a single, sag-free coat. Others apply by dip, knife, roller and slush coating methods.

Send for Bulletin VP-1 for more details.

UNICHROME **COATINGS FOR METALS**

...unique coatings to meet unusual requirements

UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y.
Detroit 20, Mich. • Waterbury 20, Conn.
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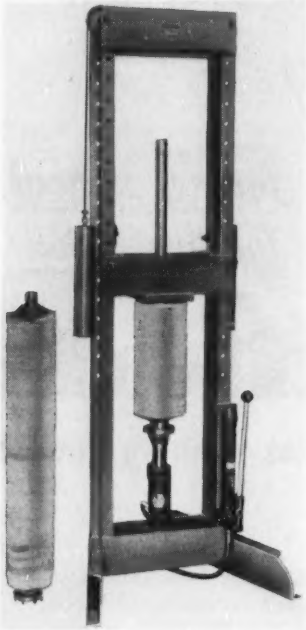
In Canada: United Chromium Limited, Toronto 1, Ont.



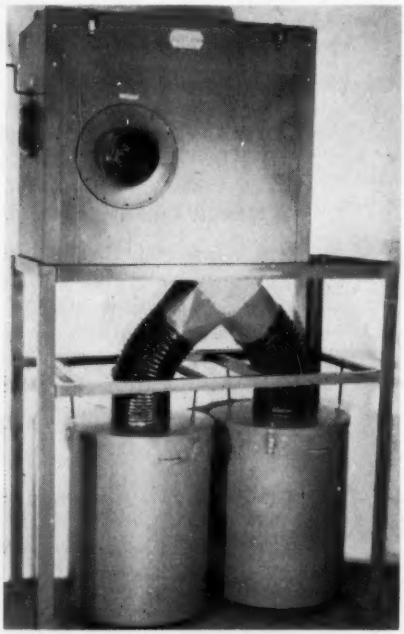
Buffing roll (left) assembled on Clair Model L Hydraulic Jack (right).

ram, as mounted at the base of the frame, exerts upward pressure on the spindle and serves as a positive location for the dead end. The spindle is automatically centered through an accurate adapter plate attached to the bottom of the adjustable counter-balanced table. The adapter plate slips over the spindle and makes full-faced contact with the buffs. Thus, vertical or sideway thrust against the spindle is avoided, regardless of ram pressure. Accurate adapter plates that conform with the diameter of the spindle being loaded are readily interchanged. According to the manufacturer, the model L puts an end to bent spindles and off-balance rolls.

An indicating pressure gauge assembly—reading directly in ram pressure is available as an optional feature. For further information write Clair Mfg. Co., Inc., 1010 S. Union St., Olean, N. Y., or circle No. 6 on Reader Service Card inside back cover.

Dust Collector

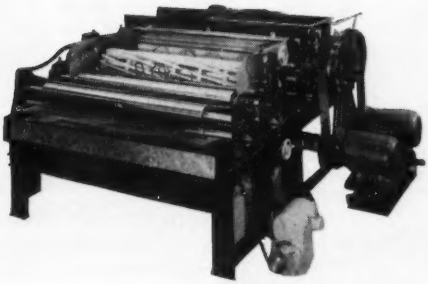
Aget Manufacturing Co., Adrian, Mich., has announced a dust collecting unit, resulting from recent design changes made in the "Dustkop" Model 11w50. The height of the unit has been reduced approximately 10 inches by elimination of the standard dust bin. Filtered dust, shavings, chips, and lint



Aget "Dustkop" Model 11w50 Dust Collector.

a FULLER BRUSH product

A Brushing Machine?



'YES' we've solved production problems for mirror, laminated plastic, strip metal, paper processing, lithographing and automotive industries.

Maybe we can solve yours too!

Outline your problem and we'll work out an answer for you. Simply send your letter to. .

Machine Division
THE FULLER BRUSH CO.
3626 MAIN ST., HARTFORD 15, CONN.

a FULLER BRUSH product

drop directly into collecting roller cans. The two roller cans plus the diversion "Y" have greater capacity and the system is more airtight. The all metal, flexible diversion "Y" provides the cans with a more permanent seal, permitting dust to flow freely and settle faster. Lid and "Y" connections are self suspending during roller can removal and dumping.

For further data circle No. 7 on Reader Service Card inside back cover.

Bright Copper

The Thor Chemical & Equipment Corp. has announced "Thor-O-Brite Copper Solution," which produces a copper deposit that serves as a base for nickel and chromium plating. Designed for use particularly over die castings, it is also well suited for use on steel, since the deposit is soft and ductile and is readily buffed to a smooth finish, hiding emery marks. The brighteners are not critical, and a single material can be used in conventional or barrel plating solutions over a wide range of temperatures and concentrations with good results.

For bright deposits it is simply added to the standard solution, the concentration adjusted, and the bath then operated in the usual manner. For high speed plating, a potassium salt formulation is recommended together with agitation and temperature control. This material alone is used 1 per cent by volume in the plating bath. For further information write the Thor Chemical & Equipment Corp., 77 S. 5th St., Brooklyn 11, N. Y., or circle No. 8 on Reader Service Card inside back cover.

Filter your Solutions!
50-2400 GAL/HR.
Self-priming Model LSIN-10 . . . Cap. 100 gal/hr. H.T. Lucite Filter Assembly. Stainless pump . . . totally enclosed Motor . . . portable . . . Wt. 60 lbs. . . . 14"x16"x16" high.
Distributors in principal cities. Write for literature.
PARTIAL LIST OF MODELS
Model
Rated Capacity
Overall Size
Weight
LSI-5 50 gal/hr 11"x14"x12" 30 lbs.
LSI-10 100 gal/hr 12"x16"x16" 40 lbs.
ASI-300 300 gal/hr 2'x2'x2' 125 lbs.
ASI-600 600 gal/hr 2'x2'x2' 150 lbs.
RLS-1200 1800 gal/hr 2'x3'x3' 300 lbs.
SERVICE . . . Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size. Strainer stops metallic objects.
DESIGN . . . Filter Assembly fabricated of stainless steel 316, high temperature lucite, rubber-lined, Haveg or Sethrin® resin. Filter Tubes of cotton dynel, porous stone or porous carbon. Pumps fabricated of Hastelloy, stainless 316 or plastic; centrifugal or self-priming. Motors drip-proof, totally enclosed, or explosion proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. Hose — special acid and alkali resistant. Base — Linen Phenolic laminate on rubber tire ball bearing casters.
Sethco MANUFACTURING COMPANY
70-72 Willoughby Street • Brooklyn 1, N. Y.

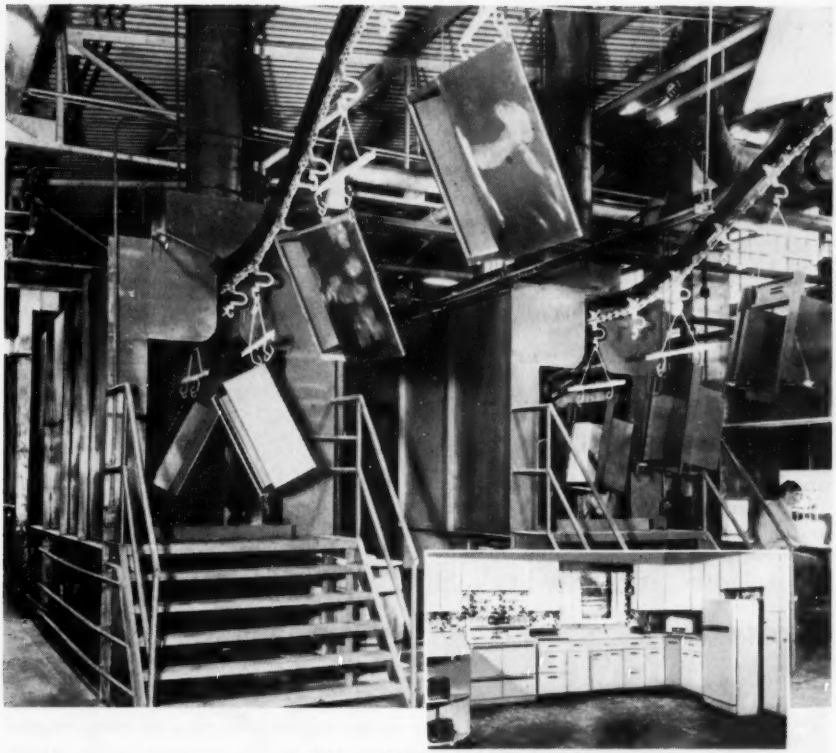
Corrosion Resistant Primer

LockPrime, a corrosion resistant liquid primer for new or corroded steel surfaces, has been announced by Pennsylvania Salt Manufacturing Co.

Applied by brush or roller directly from the can, LockPrime offers excellent resistance to under-cutting by corrosion when cover coats are mechanically damaged, the manufacturer states.

On either sandblasted new steel or wirebrushed rusted steel, LockPrime forms a tight adherent bond to the surface and provides excellent adhesion for following top coats of Pennsalt Neo-Coat (liquid neoprene) or Pennsalt Thickcoat, a chlorinated alipathic hydrocarbon. It is equally effective in acidic and organic atmospheres.

Applicable to all ferrous metal surfaces, tile red LockPrime contains 28 per cent solids content by weight and covers 200 square feet per gallon per 1



How to get a "Bulldog Grip" on beauty!

The bright, shiny new paint finish looks wonderful when it comes off the production line. Looks equally fine in the showroom, when the customer makes her choice.

Then it gets out into service, and the real test begins.

Bonderite's "bulldog grip" holds paint finish to metal. In Bonderite installations like the one shown above, the surface of the metal (before painting) is converted chemically to a nonmetallic coating integral with the metal which resists corrosion, confines damage from scratches to the site of the injury itself. It's satisfaction insurance, used today on leading painted products of all types where lasting fine appearance is important.

If you aren't now using Bonderite on your painted metal products, better check up and learn how economically you can have its advantages. Call or write today!

**Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U. S. Pat. Off.*

Since 1915—Leader in the Field

PARKER RUST PROOF COMPANY

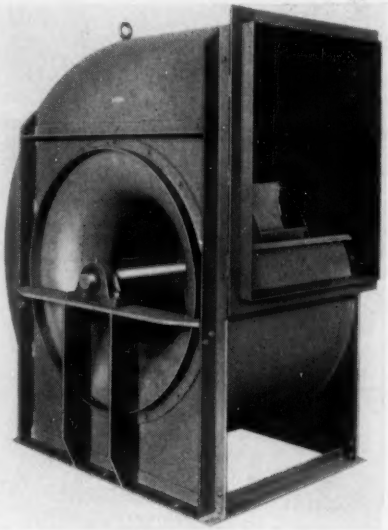
2172E. Milwaukee, Detroit 11, Michigan

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

mil coat. Since the bond strength of this primer increases with age, immediate application of top coat is unnecessary. As a basic component of the Pennsalt NeoCoat-Thickcoat system, Lock-Prime is now available in 1 gallon cans and 5 gallon drums. For further information, write Pennsylvania Salt Manufacturing Co., 1001 Widener Building, Philadelphia 7, Pa., or circle No. 9 on Reader Service Card inside back cover.

Industrial Fan

The New York Blower Co. has announced a redesigned fan having improved power limiting characteristics. These fans are available in standard and heavy duty models, the standard duty being recommended for all normal industrial applications, and the heavy duty for application requiring either higher pressures or more rugged construction for corrosion, erosion, abrasion or shock loads.



New York Blower Standard Duty Fan with Improved Power Limiting Wheel

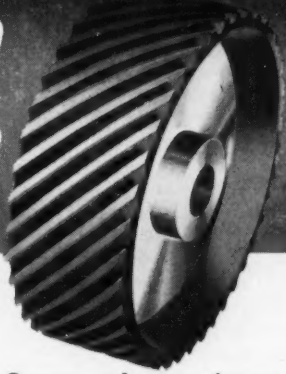
The power limiting characteristics of the redesigned wheel are advantageous in that they require less horsepower to move a given air volume. Thus it is possible to use the minimum motor size necessary without overloading.

New York Blower Co. fans also feature low sound levels in the maximum efficiency ranges. They have a spun inlet cone, which directs air to the wheel at the proper speed, and are of all welded construction. To assure minimum vibration, they are statically and dynamically balanced and checked for vibration in the assembled form under operational conditions.

For further data circle No. 10 on Reader Service Card inside back cover.

TECHNIC
Soluble Gold
For
Industrial
and
Decorative
Electroplating
THE WORLD'S BEST SOLUBLE GOLD AND RHODIUM
TECHNIC INC.
Providence, Rhode Island, U.S.A.
JAckson 1-4200

CUTS COSTS like Magic!



Chicago Rubber Company's amazing new R54 contact wheel cuts better—faster—longer and will substantially reduce your grinding and polishing costs 3 ways.

This precision machined and accurately balanced wheel is easily and quickly knocked down and reassembled for tire replacement or change.

- Replace only the rubber tire when necessary instead of the entire wheel.
- Choose from a complete assortment of tire treads for different grinding operations, still using the same wheel.
- And as usual Chicago Rubber Company's R54 contact wheel allows you to get the most wear from your abrasive belt—more than you ever got before.

There is a replaceable rubber tire with proper tread for every grinding requirement and in a wide variety of durometer ratings. Write for descriptive literature.

"IT'S THE WHEEL THAT DOES THE WORK"

CHICAGO RUBBER COMPANY, INC.

Main Office & Factory
2620 N. Clybourn Ave. Chicago
Makers of the COSMOWHEEL

Selenium Rectifier

The Walker Division, Norma-Hoffmann Bearings Corporation, Stamford, Connecticut, has announced a new line of selenium rectifiers for electroplating and anodizing.

They are available in two types. The basic rectifier delivers the voltage and current stamped on the name plate but has no controls. The self contained rectifier incorporates the basic unit with voltage controls and includes instruments, all within a single cabinet.

All Walker rectifiers have oversized components and employ copper bus bars with low current density.

A remote control unit is available for use with the basic rectifier. This control may be mounted at a location distant from the basic rectifier for convenience of operation.

All Walker Selenium Rectifiers have a power factor of 95 per cent and a D. C. ripple of approximately 4 per cent. A lower ripple content is available on request.

Walker Selenium Rectifier

For further data circle No. 12 on Reader Service Card inside back cover.

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can *rely* on
RANDOLPH
for prompt shipment
in any quantity of
Performance - Proved
Government Specification
FINISHES
Lacquers • Enamels • Dopes • Thinners
Clear Metal Finishes • Colored Lacquers
Clear S.G. for Metal • Texture Enamels
Specialized Production Finishes
Aircraft Finishes
RANDOLPH
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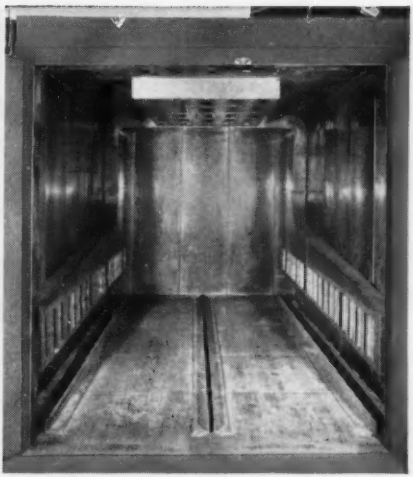
CARLSTADT, NEW JERSEY

Emulsion Cleaner

Kelite MD-1, a dust-free powder composition which forms an emulsion with water, exhibits high surface activity and cleaning efficiency in the removal of protective mill oil from steel, the manufacturer claims. Kelite MD-1 is used as a tank immersion cleaner at 160 to 180 deg. F. The cycle employed is 0.5 to 3.0 minutes depending upon the amount and tenacity of the soil present. MD-1 is especially effective when using the Keykote process to deposit a molybdate coating prior to painting.



Uniform temperature of SLY Convectioneered Ovens *speeds product finishing*

This highly efficient, yet inexpensive, box type oven is being used for a wide variety of work involving baking, drying, and finishing.

Equipped with a modern, forced convection heating system, it assures uniform temperature throughout — faster and better baking for finishing, quick removal of moisture and fumes, and operating economies.

This efficient handling of air in Sly Ovens is the key to their operating efficiency. Properly located ducts of generous size, in relation to the circulating fan, insure free air flow and uniform distribution.

Ask for Bulletin 200, describing Sly Ovens for every need, and discover the advantages in Sly Convectioneered Ovens for your operations.

THE W. W. SLY MANUFACTURING CO.

4784 TRAIN AVENUE • CLEVELAND 2, OHIO

Branches in:
New York • Chicago • Philadelphia • Rochester
Detroit • Buffalo • Cincinnati • St. Louis • Minneapolis
Birmingham • Denver • Los Angeles • Toronto

Kelite MD-1 is strongly buffered and accordingly exhibits a fairly constant pH over a wide range of concentration. Complete data is available from the manufacturer, Kelite Products, Inc., 1250 N. Main St., Los Angeles 12, Cal., or by circling No. 13 on Reader Service Card inside back cover.

Aluminum Die Castings

Production research has made possible a substantial improvement in the finish on aluminum die castings as they come from the die, it has been announced by Aluminum Company of America.

Aluminum die cast parts with a hardware class finish, obtained without additional processing, will now be more attractive to designers of automotive hardware, appliances and builders hardware.

The finishes shown include chromium plating, Alumilite (both natural and colored) and mechanical finishing. The die castings themselves offer a suggestion of the wide range of automotive hardware, appliance parts and builders hardware on which the finishes can be applied.

In the past, aluminum die castings had to be subjected to expensive finishing operations before chrome plating. With the improved finish they can be plated with much greater ease. This development will allow the designer to make use of the light weight and dimensional stability of aluminum die castings where a chrome plated part is required.

The improved die cast finishes also will make possible better Alumilite finishes in the many colors available. The parts can also be easily buffed to a high polish, and lend themselves more readily to other mechanical and painted finishes.

For further data circle No. 14 on Reader Service Card inside back cover.

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BOOTHCOTE
the finest product made!
SAFER
NON-INFLAMMABLE, NON-TOXIC.
DRY-OR-WET
Boothcote No. 4 for dry wall booths
(just peel off overspray)
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TIME, LABOR, MONEY!
In 55 gal. drums..... 80¢ gal.
In 15 gal. drums.....$1.00 gal.
In 5 gal. pails.....$1.25 gal.
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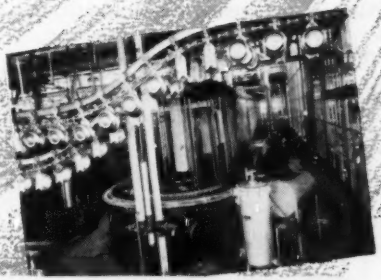
Inquiries Invited—Samples On Request
HYGRADE Food Products Corp.
Industrial Division
18 Stetson St., Buffalo 6, N. Y.

MEAKER

Automation...



The Key to Successful High Speed PLATING

- Higher Production
- Versatility
- Economical Operation
- Better Finish

Automation by MEAKER is the sure way to more successful plating, anodizing, phosphatizing and other processing operations — at higher speeds — thus lower cost. MEAKER builds automatic plating equipment especially to fit your operation, whatever it may be.

Let us know about your problem and ask to have a MEAKER engineer study it and make recommendations at no obligation.

THE MEAKER COMPANY

1629 SOUTH 55th AVENUE • CHICAGO 50, ILLINOIS
Phone OLympic 2-2110

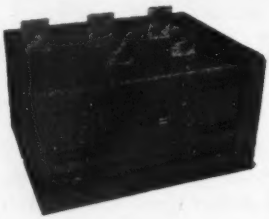
Prepaint Cleaner

Metasurf Corporation, 12830 Eaton Avenue, Detroit 27, Michigan, has published technical data on Surfclean #10, a compound for cleaning and preparing for paint, parts too large or bulky to be processed by conveyorized methods.

Surfclean #10 is said to remove all normal soil, oil, and dirt as well as rust, tarnish, and corrosive salts. Metal surfaces treated with Surfclean #10 are etched to give excellent paint adhesion and are converted to an iron phosphate coating for long paint life and durability.

Surfclean #10 completely neutralizes any corrosive salts on the metal surface and is ideal in a dilute form as a final rinse after alkaline cleaning or stripping. It may also be used for removing burns or tarnish from tools and equipment. For use it is diluted with water. Application is by brush, sponge, flow on, or dipping. It is non-toxic and non-flammable.

For further data circle No. 15 on Reader Service Card inside back cover.



P.R. (Periodic Reverse)

THE MODERN WAY TO THE FINEST PLATING

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UPA

UNIT PROCESS ASSEMBLIES, INC.

75 East 4th St. • New York 3, N. Y.

Polishing Oil

D. A. Stuart Oil Company's Excelene Grinding and Polishing Oil for use with abrasive belts improves surface finish and increases belt life and production on many abrasive belt grinding and polishing operations, it is claimed. Available in 12 oz. pressurized cans, it is easy for operators to handle and apply.

Excelene Polishing Oil in pressurized can

Two types are available, Excelene NF for use with non-ferrous metals and Excelene FD for ferrous metals.

For further information contact D. A. Stuart Oil Co., 2727 S. Troy Street, Chicago 23, Ill., or circle No. 16 on Reader Service Card inside back cover.

Hot Spray Unit

Roxon, Inc., has announced Model V.950 ThermoVolumaire unit, which converts existing high pressure cold

Come to TUMBLE GRAV-I-FLO FINISH

. . . For Higher Lustre — Smoother Finish On Metal Parts

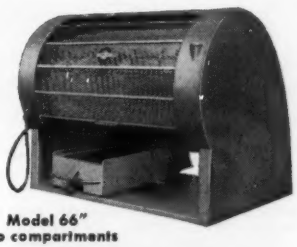
Get a superior finish on metal parts with Super-Brite chips and compounds employed in the Grav-i-Flo Tumbling Process. These materials cut faster, eliminate need of transferring parts between roughing and finishing, and end subsequent operations such as ball burnishing.

Grav-i-Flo cuts direct labor costs, too. Hundreds of companies are getting better finishing and deburring results, faster and cheaper. Check these advantages to improve your competitive position today!

Grav-i-Flo Offers Complete Equipment and Supplies For All Your Tumbling Needs!

Machines—5 sizes—66″, 48″, 36″, 32″ and 24″. Cam locked doors with safety stop; unlined or rubber lined; constant or variable speed; J.I.C. controls; timers 5 min. to 20 hrs.; electric wiring and water piping.

Compounds—Natural and synthetic deburring and finishing chips and highly developed compounds outperform every type of tumbling process offered.



Model 66″ Two compartments

Accessories — Separator and chip grader, hoist pans, chip pans, washout doors, screens, chip bins, unloading boots, dip tanks.

Investigate — Our representative will visit your plant; or send samples direct to us. Engineering Service available to all users.

SEND FOR CATALOG showing complete line of Grav-i-Flo equipment, accessories and supplies.

GRAV-I-FLO CORPORATION, Dept PF-1, Sturgis, Mich.

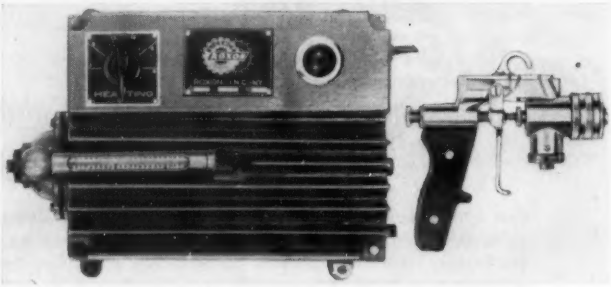
☐ Please send complete catalog. ☐ Have Sales Engineer call. ☐ We are sending samples for free processing.

Company_____

Name_____ Position_____

City_____ State_____

THE GRAV-I-FLO CORPORATION 400 NORWOOD AVENUE STURGIS, MICHIGAN



Roxon Model V.950 Hot Spray Unit (left) and Spray Gun (right).

paint spray systems to hot volume air spraying, at controlled temperatures of air and heat between 80 and 250 deg. F. by attaching standard high pressure air and paint hoses to the unit.

Heat makes possible spraying of paint at its original consistency, which gives one coat coverage. Penetration, adhesion and flowout are improved, and orange peel is reduced, it is claimed. Hot application allows painting at lower ambient temperature and higher humidity. The unit may be used at any distance from the paint and air source.

The ThermoVolumaire method uses air at negligible pressure, thereby decreasing the chilling effect of decompression of high pressure air at the gun nozzle. Rapidly decompressing air cools paint instantaneously below ambient temperature and deposits it on the surface cold, thus losing this advantage of hot spraying.

The spray gun used with the V.950 Unit is the standard Roxon Volumaire universal gun. The nozzle on this gun may be used with most standard paint formulations. It allows external or internal atomization and produces a round or flat jet ½ inch to 12 inches wide. For further information, write Roxon, Inc., 50 Broad St., New York 4, N. Y., or circle No. 15 on Reader Service Card inside back cover.

Protect your Anode Hooks and Rods Against Pitting and Corrosion from dragout drip, with

ANODE CAPS

3" wide by 24" long

A style shaped for smaller hooks, such as type used with Nickel Anodes, etc.

A style shaped for larger hooks, such as type used with Lead Anodes, etc.

Made of sheet steel, heavily coated with TYGOFLEX PLASTIC, completely resistant to *Acid drip* and *fumes*.

More than pays for itself in savings on hook and rod equipment.

Cheerfully we will mail descriptive details—
We will also answer any specific problems—
No obligation!

Another PROGRESS item in the line of

THOR CHEMICAL & EQUIPMENT CORP.

77 South 5th Street, Brooklyn 11, New York
Telephone EVergreen 8-5502

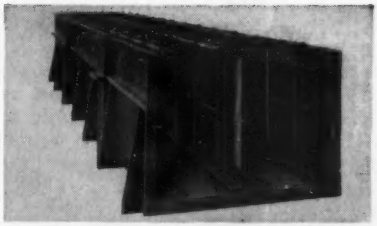
Zinc Brighteners

Two zinc brighteners known as Perma-Brite "S" for still or automatic, and Perma-Brite "B" for barrel plating, have been announced by R. O. Hull & Co., Inc., Rocky River, O.

Notable features of Perma-Brite Zinc Brighteners are: exceptional bright zinc deposits, preferably after bright dipping; high throwing power and covering power; wide effective concentration range; may be added directly to the plating bath once a week or once

● A true advancement in electroplating, ARco Diaphragm Systems have created a new standard in plating quality. Simply installed, Diaphragm Systems segregate anolyte from catholyte through canvas barriers between anode and cathode. This electroplating method, combined with ARco Rubber Lined Tanks and planned solution circulation, filters metallic insolubles from outside sources.

Reduce costly buffing due to roughness . . . prevent rejects because of thin spots . . . have ARco engineers show you how Diaphragm Systems can save time, materials . . . and customers.



● ARco Two Work Lane Diaphragm Plating Tank

● ARco Horizontal Diaphragm Installation

For uniformly high quality and economy in plating...

DIAPHRAGM SYSTEMS *and* RUBBER LINED TANKS

by ARco

AUTOMOTIVE RUBBER CO., INC.

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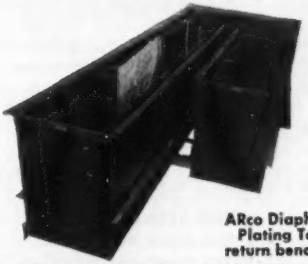
ARco Vertical Diaphragm Installation



ARco Diaphragm Plating Tank, return bend type

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4033 Homestead Road
Houston • Texas

AUTOMOTIVE RUBBER CO., INC.
12564 Beech Rd., Detroit 39, Mich.

Please rush me _____ copies of your "Diaphragm Tanks Promote Plating Progress."

Name_____

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a day as desired, just as it comes in liquid form; stability in idle baths; promotes smooth zinc anodes corrosion.

For additional information write R. O. Hull & Co., Inc., 1306 Parsons Court, Rocky River 16, Ohio, or circle No. 16 on Reader Service Card.

Automatic Selenium Rectifier

An automatic selenium rectifier for heavy-duty production testing is reported to have an adjustable output voltage ranging from 3 to 15 volts, 25 to 120 amperes DC, filtered to 1 per cent r.m.s. ripple, with automatic constant voltage plus or minus 1 per cent. There is also automatic correction of plus or minus 5 per cent for fluctuations of the AC input, which is 220 volts, 3-phase, 60 cycles.

Automatic Selenium Rectifier

The unit is convection cooled for 35 deg. C. ambient temperature operation and offers the advantage of automatic circuits which are completely magnetic, with no electronic components. Housed in a cabinet 20 by 20 by 46 inches high, it is produced by Richardson-Allen Corporation, 116-15 Fifteenth Avenue, College Point, N. Y.

For further data circle No. 17 on Reader Service Card inside back cover.

KEEP SPRAY BOOTHS SAFER FROM FIRES!

with the original non-inflammable

BATES BOOTHCOATING #4 (for dry booths)
BATES BOOTHCOATING #5 (water type)
BATES FLOORCOATING (for floors)
at 1940 prices

- Makes frequent cleaning easy
- Paint peels off in sheets
- Saves time and labor in applying
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55 gallon drums 80¢ gallon*
F.O.B. Buffalo, N. Y.
*55 gallon drums only prepaid $1.00 gal.

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300# drums 12¢ lb. Buffalo

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Distributors Franchise Open

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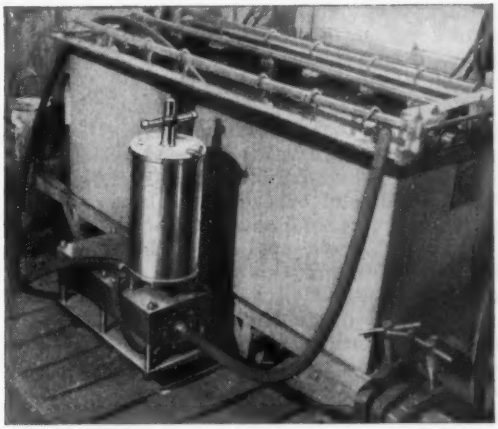
Surface Treatment for Aluminum

Proseal No. 16, a new chromate conversion protective coating for aluminum and aluminum alloys, has been announced by Promat Division, Poor & Company, Waukegan, Illinois.

Said to effectively inhibit corrosive

Here's how to cut your losses

get better finished plated work — save time and labor



The *"Sealed-Disc"* Filter will remove all dirt, dust, and sludge from your plating solutions. You will no longer worry about pitting, spotting, poor adhesion, formation of nodules, etc.

More and more platers testify to the remarkable savings in operating time and labor that the *"Sealed-Disc"* Filter gives them. These cost-minded platers get better finished plated work and have found that their solutions last l o n g e r. *"Sealed-Disc"* Filters, designed to meet plating room requirements, are smaller, more compact and portable, than ordinary conventional filters.

Regardless of the size or type of your installation, there's a *"Sealed-Disc"* Filter to "fit your job". You can depend on a *"Sealed-Disc"* Filter for positive, trouble-free performance that's proof against even the invisible impurities that cause nodules and porousness, proof against losses caused by rejects and reworking. Write for complete details or contact your regular plating supplier.

ALSOP

ENGINEERING CORPORATION

1001 Keen Street Milldale, Connecticut

Other Alsop Plating Room Equipment

We manufacture a full line of Mixers and Agitators covering a complete range of sizes, for mixing, blending, and dissolving. Stainless Steel Mixing Tanks are also available in a wide range of capacities. For full details and illustrations write for your free catalog.

action between paint and aluminum, the new protective film meets requirements specified in MIL-C-5541 for military aircraft applications and, according to the manufacturer, is designed for use on any application where extruded, forged, wrought or cast aluminum and its alloys are used.

Results of professional laboratory tests indicate that no changes in physical properties have been noted on panels treated with Proseal No. 16 after 500 hours of exposure to 20 per cent salt spray solution at 95 deg. F.

Reported effectiveness of the film is attributed to the deposit of a high percentage of insoluble, trivalent chrome —as opposed to a lower concentration of soluble, hexavalent chrome. Relative ratios of the chromate films (as shown on attached chart) are maintained at about 5 to 1.

Outstanding advantages of the new chromate film, as reported by Promat, are: greater control over uniformity of film; suitability for production coating of any aluminum component; provides high protection from corrosion,

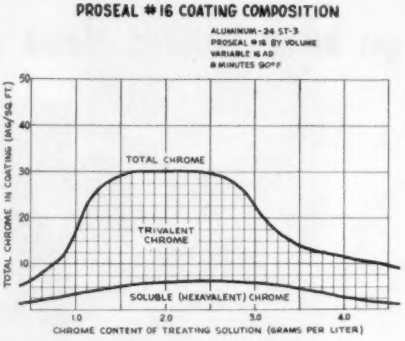


Chart showing relative effectiveness of chromate films.

when used alone, or as a base for paint; is easily controlled.

For further information write Promat Division, Poor & Company, 851 Market Street, Waukegan, Ill., or circle No. 18 on Reader Service Card inside back cover.

Non-Etching Aluminum Cleaner

Enthone, Inc., 442 Elm Street, New Haven, Conn., has announced the development of a new detergent for rapid cleaning of aluminum. This product is called "Aluminum Cleaner NE-6." It is stated to be mild in alkalinity, does not etch metals either at the air interface or in contact with other metals, and at the same time possesses very high detergency.

It is claimed to have remarkable ability to disperse oils and to remove

McKeon's "Liquid Sulphur"
Economical, satisfactory for
STRIPPING COPPER
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OXIDIZING COPPER AND SILVER
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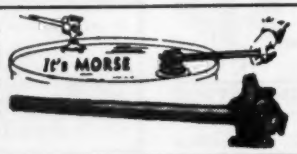
DRUM PLUG WRENCH
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!



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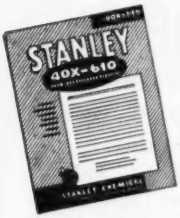
SATISFACTION GUARANTEED.... $3.30
Non-sparking type $5.10
Plus Parcel Post
MORSE MFG. CO., Inc.
762 W. Manlius St., E. Syracuse, N. Y.

Weatherproofs in ONE OPERATION

Stanley 40X-610 one-package WASH-PRIMER

Now steel or iron parts can keep the weather at bay throughout a year of outdoor storage without topcoating. Reason: Stanley 40X-610. This one-package, one-operation wash primer for spraying, brushing, or dipping forms a weather-tight skin that lasts. Its resistance to corrosion and rust creep is excellent. And Stanley 40X-610 may be used with most topcoats. Find out more about this low-cost, easy-to-apply outdoor protection . . . write today for the new bulletin on Stanley 40X-610 to: Stanley Chemical Company, 31 Berlin Street, East Berlin, Connecticut.



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SYNTHETICS

ENAMELS

STANLEY CHEMICAL

marking ink and crayon normally present on aluminum sheet. The cleaner is recommended for cleaning cast and wrought aluminum prior to anodizing, chromate treatments, organic finishing, resistance welding and plating by the non-etching process.

The cleaner can be put in steel or stainless steel containers, and it is normally used in the concentration range from 6-8 oz./gallon.

For further data circle No. 19 on Reader Service Card inside back cover.

High Temperature Masking Tape

High Temperature Masking Tape for Anodized Surfaces

Behr-Manning Corp., Div. of Norton Co., Troy, N. Y., has announced the addition of a special high temperature masking tape No. 113 to its existing line of pressure sensitive tapes. Designed specifically for masking pretreated surfaces, such as anodized aluminum and magnesium, tape No. 113 will adhere at baking temperatures up to 350 deg. F. and is available to in-

DIXRIP
fine wire
SCRATCH BRUSHES
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For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.

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NEW, BRIGHT COPPER PROCESS
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FOR ALL BARREL AND STILL CYANIDE SOLUTIONS
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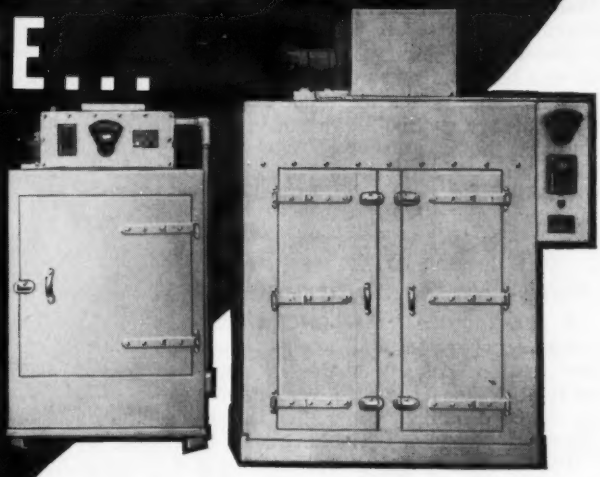
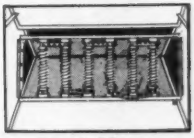
or SMALL SIZES....



Latest Type Indicating Controls



Open Coil Design —Low Gradient

Fiber Glass Insulation

OVENS DESIGNED FOR MODERN DAY NEEDS!

Any manufacturer who has large batch loads to finish bake — with limited floor space Young & Bertke single or two door — gas or electric fired ovens are designed and built for heavy duty work. Easily installed, convenient to move and economical to operate. Present day manufacturing schedules demand modern ovens, temperature uniformity and air circulation. Young & Bertke hi-volume, forced convected ovens affect positive exhaust and controlled air intake adaptable to today's new, synthetic finishes.

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Forced Convection Heated

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OVENS • SPRAY BOOTHS • DUST and FUME CONTROL

2291 BUCK STREET CINCINNATI (14) OHIO

dustrial consumers through Behr-Manning field engineers and industrial distributors.

The 60 yard-long tape is available in 15 standard widths ranging from ¼-inch to 3 inches. Special order can be filled for any desired width not in the standard line.

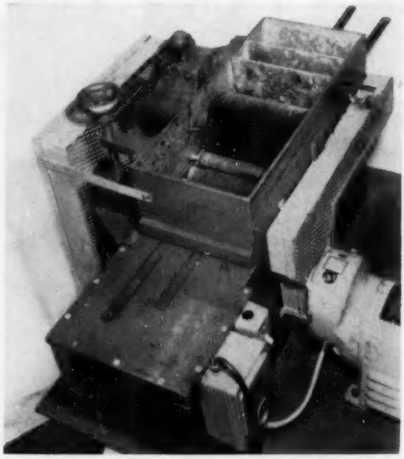
For further data circle No. 20 on Reader Service Card inside back cover.

Hack Saw Blade Scrubber

A new industrial machine that removes loose scale and sludge from heat treated hack saw blades, or similar types of stock, before they are painted has been built by the Fuller Brush Company Machine Division.

The operator merely loads the machine and the scrubbed, steam cleaned blades quickly emerge into a basket or onto a conveyor. Called the Hack Saw Blade Scrubber, the machine can be adapted to scrub any strip stock material on one side or both.

When processed, the hack saw blades first pass through the cleaning agents—hot water and rust inhibitor containing detergent — where brushes effectively remove all scale and sludge. A steam chamber, separated by a baffle compartment from the brush chamber, helps dry the blades in the next stage of the operation.

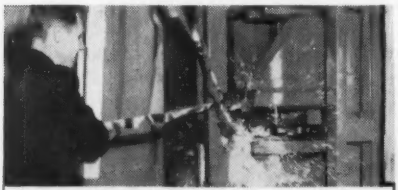


Hack Saw Blade Scrubber

For hack saw blade brushing, 0.008 crimped phosphor bronze wire, coiled close wound in a right hand spiral, is used. For other applications, any brush material can be substituted to do the particular job required.

The rate of feed through the machine is 41 lineal feet a minute. Required to power the unit are two 1 h.p. brush motors, a 1/3 h.p. feed roll motor, and a 1/15 h.p. detergent slinger ring motor.

For information, write to: The Ful-



The christening! The *Stevadoer*, the newest addition to the complete Stevens line of automatic plating and processing equipment, will be announced soon. Write us so that your name can be placed on our announcement mailing. *Frederic B. Stevens, Inc., Detroit 16, Michigan.*

SOLVENTS and THINNERS RECOVERED

from wash thinners, spoiled lacquers, degreasing machine sludge, etc.

Solvents recovered by the Lofgren Process. Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. *Write to:*

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1025 Broad St. **Newark 2, New Jersey**

Hammond Solvents Recovery Service
241 Brunswick Rd. **Hammond, Ind.**

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Affiliate: GORDON BARTELS CO., *Roller Coating Specialists*

ler Brush Company, Machine Division, Hartford 2, Connecticut, or circle No. 21 on Reader Service Card inside back cover.

Sulfate Test Set

The Kocour Sulfate Test Set is now available with either of two centrifuges, a compact hand-driven centrifuge or an electric centrifuge. This analytical set determines the sulfate content in a chromium plating solution.

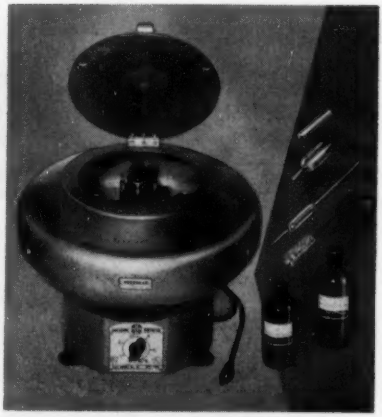
Additional procedures are available for determining sodium sulfate or epsom salts in nickel plating solutions. Operation of this test set is simple. It was designed so that anyone can make a test. For complete descriptive literature write to Kocour Co., 4814 S. St. Louis, Chicago 32, Ill., or circle No. 22 on Reader Service Card inside cover.

Spray Cleaner

A spray type cleaner that combines solvent, wetting agent and alkaline as a multi-phase cleaner has been announced by the Van Straaten Chemical Company of Chicago.

The new cleaner, known as Vantrol 5618, is especially effective on steel, according to initial use in plants where it has been field tested.

In addition to its effective removal of shop and mill oils, drawing compounds, and heavy greases, the industrial washing machine cleaner also is effective in rust protection.



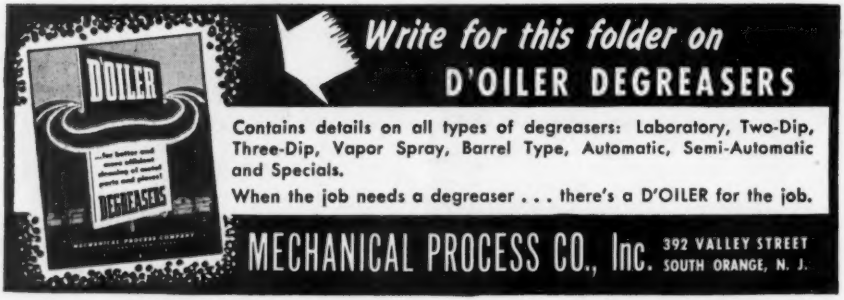
Kocour Sulfate Test Set

In addition, it will not clog nozzles and is non-foaming and rapid in its cleaning action, according to the manufacturer.

For further data circle No. 23 on Reader Service Card inside back cover.

Generator Brush

A metal graphite brush that prolongs brush life, reduces commutator wear has been announced by the Stackpole Carbon Company, St. Marys, Pa.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DEGREASERS
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Contains details on all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic and Specials.
When the job needs a degreaser . . . there's a D'OILER for the job.
MECHANICAL PROCESS CO., Inc.
392 VALLEY STREET
SOUTH ORANGE, N. J.

An improved type stabilizing shunt automatically distributes the current evenly between the various brushes. Commutation is exceptionally good, it is claimed. Commutator threading and grooving are reduced and, in some cases, eliminated.

Available brush grades and types meet practically any plating generator requirement. Complete details are available from the Stackpole Carbon Co., St. Mary's, Pa., or by circling No. 24 on Reader Service Card inside back cover.

Contact Wheel for Belt Polishing

A contact wheel, designated the "TF-54," combining aggressiveness with softness and conformability, has been developed for coated abrasive belt polishing and finishing by Chicago Rubber Co., and Minnesota Mining & Manufacturing Co., of St. Paul.

TF-54 Contact Wheel

The TF-54 is made of a new red rubber compound which is abrasive and oil resistant. The TF-54 offers a high-tensile 20 durometer wheel which can safely be run at speeds up to 10,000 surface feet per minute. It is lively and long-wearing, giving maximum conformability to curved surfaces, and is dynamically balanced. TF-54 has a demountable rim or tire, is serrated, with ¼ inch lands and ¾ inch grooves which allow for maximum belt efficiency and extended belt life, and has rubber side flanges which prevent edge wear.

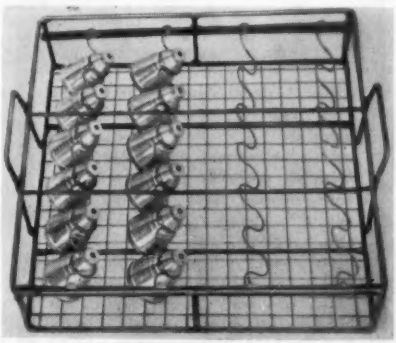
The wheel's ability to conform to contoured surfaces — including acorn faucets, die casts, stampings for the appliance industry, hardware and the like — means fewer passes to polish a contour, without harsh cuts, grabbing and strikes.

The TF-54 is available from Chicago Rubber Co., 2640 North Clybourn Ave., Chicago, Ill., in 20, 30, 40 and 60 durometer, and is also being offered on a trial basis.

For further data circle No. 25 on Reader Service Card inside back cover.

Degreasing Basket

Wiretex Manufacturing Company has prepared a container that serves as a degreasing basket and, at the same time, as a work transfer receptacle for aluminum bomb fuse heads. The container was made for Bulova Watch Company. It consists of a steel frame mesh and carrying handles with replaceable aluminum-wire holders rigidly fastened into place, and shaped to hold the fuse heads in such a way as



Wiretex Degreasing Basket

to keep them from touching each other or any other part of the basket.

In the production process, 24 fuse heads at a time are carried from the primary operation to degreasing and then through the sequence of secondary operations. Despite all of the handling and transportation, the Wiretex basket prevents scratching and denting of thin-walled, close-tolerance parts.

For further data circle No. 26 on Reader Service Card inside back cover.

Polyvinyl Chloride Valve

The Lunkenheimer Company of Cincinnati has announced all molded polyvinyl chloride valves and fittings. This line, designed and engineered by Lunkenheimer, has been patented and registered under the name "Luncor."

Sectional (left) and exterior view of "Luncor" PVC Valve

The valve resists most chemicals used in industry.

It is molded in rigid form, suitable for pressures up to 125 pounds and 150 deg. F., and is presently available in a Y-type globe design.

A complete line of plastic fittings and corrosion resistant piping made of the same material is also available from Lunkenheimer. This includes caps, couplings, plugs, unions, reducing bushings, flanges, 45-degree and 90-degree elbows, and tees.

Literature and more details on the new "Luncor" valves and fittings can be obtained from The Lunkenheimer Company, Cincinnati 14, Ohio, or by circling No. 27 on Reader Service Card inside back cover.

Park No. 290
BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

RotoSprayer

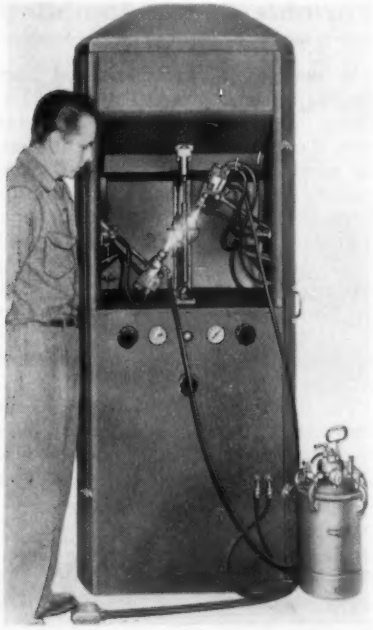
A semi-automatic painting machine developed by Finish Engineering Co., Inc., Erie, Pennsylvania, includes

booth, fan, guns, and pressure tank.

Once the part to be painted is loaded, the operator need only touch the foot valve and the hold-down automatically grips the part, rotation starts, the paint guns go on, then off, rotation stops, and the hold-down releases. In addition to an oscillating gun to assure reaching angles, corners and bridges, there are stationary gun positions. The mask opening always comes to the same position when the spindle stops rotating. Speed of rotation, timing of paint guns, gun oscillation and air pressure are set by control knobs.

According to the manufacturer, high production through use of the Roto-Sprayer has been experienced.

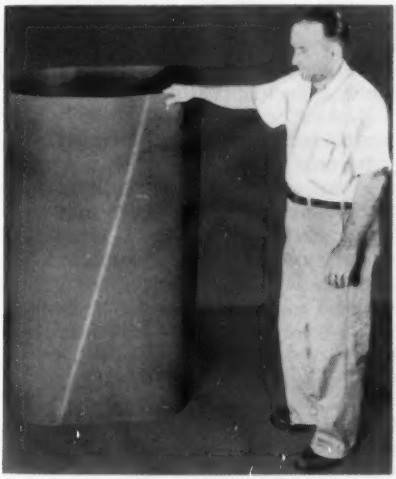
For further data circle No. 28 on Reader Service Card inside back cover.



RotoSprayer

Resinwet Cloth Belt

A 50-inch-wide coated-abrasive Resinwet Cloth Belt has been introduced commercially by Michigan Abrasive Co., Detroit, Michigan.



Resinwet Cloth Belt

The manufacturer states that under actual field tests on various types of stainless steel, the resin waterproof cloth belt has removed stock four times faster than by other methods. Also, the belt is safer and more effective because it uses water as a coolant.

Full information on the belt may be secured from any Michigan Abrasive distributor; or by contacting Michigan Abrasive Co., 11900 E. 8-Mile Road, Detroit 5, Mich., or by circling No. 29 on Reader Service Card inside back cover.

Powder Rust Remover

A nontoxic rust remover, in powder form, is being produced by the By-Buk Company, Los Angeles 19, Cal.

The strength of the resulting liquid

rust remover can be controlled to meet any derusting or corrosion removing requirement for ferrous or non-ferrous metals. It is nontoxic, non-flammable, leaves no alkalies and requires no neutralizer. It leaves the derusted surfaces clean with a thin rust-resistant coat, ready to form a bond for paints, nickel or chromium plating, galvanizing and other protective coatings, it is claimed.

Rusted or corroded objects which can be submerged in a liquid bath require only from 10 minutes to 3 hours at room temperature, depending on the amount of ferric oxide to be removed. When used as a hot bath the action may be completed in 2 seconds to 10 minutes. It derusts crevices, cracks and recesses so the final protective coating can reach into all areas. All ferric oxide is removed, leaving only a grey microcrystalline rust-inhibitive surface.

This solution is said to be effective for removing corrosion from aluminum, magnesium, copper, brass, bronze, galvanizing, and stainless steel.

For vertical surfaces and large objects, such as machinery and structures which cannot be submerged in a liquid bath, a thickening agent is added to the solution to make a syrupy substance which will adhere to such surfaces.

Corroded Surface (right) Cleaned With By-Buk Powder Rust Remover (left).

They're looking over the new "automation concept" Stevens *Stevadoer* which will be announced soon. Plan now to see this great new addition to the complete Stevens line of automatic metal finishing equipment. *Frederic B. Stevens, Inc., Detroit 16, Michigan.*

Variable-Speed Tumbling Barrel

A bench-type, variable-speed tumbling barrel, announced by The Henderson Brothers Company, Waterbury, Connecticut, offers the time saving advantage of nearly nonstop operation. While the barrel is running, it can be filled with parts or abrasive, or emptied, by tilting to pouring position. Work can be watched and samples removed for inspection; the angle can be changed for best abrasive or polishing action; the running speed can be adjusted over an average range of 10 to 40 r.p.m.

The barrel is made in various sizes, shapes and materials. The bench model and three pedestal models with variable speed, match a line of four

For a real good polishing job use

Keystone TURKISH Emery

FRESH SUPPLY AVAILABLE

KEYSTONE EMERY MILLS *Write for Sample* **4316 Paul St., Phila., Pa.**

Variable-Speed Tumbling Barrel

tilting single-speed machines. Catalog is available.

For further data circle No. 31 on Reader Service Card inside back cover.

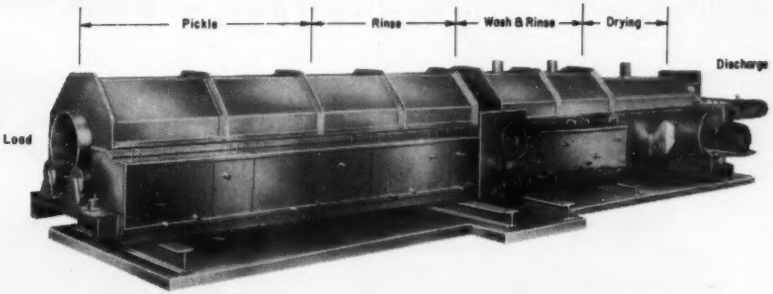
Chromate Protective Film

Promat Division, Poor & Company, has announced a chromate treatment for hot dip galvanized surfaces. The material, identified as Proseal D-36, is said to give good resistance to the formation of white corrosion products without discoloring galvanized surfaces.

The following results were noted where Proseal D-36 was applied to hot dip galvanized sheet in continuous mill operations: a minimum of zinc dilution was evidenced; there was no discoloration of the surface; treated surfaces resist corrosion in pack test.

For further information write to Promat Division, Poor & Company, 851 S. Market Street, Waukegan, Illinois, or circle No. 32 on Reader Service Card inside back cover.

Cleaning • Pickling • Washing • Drying



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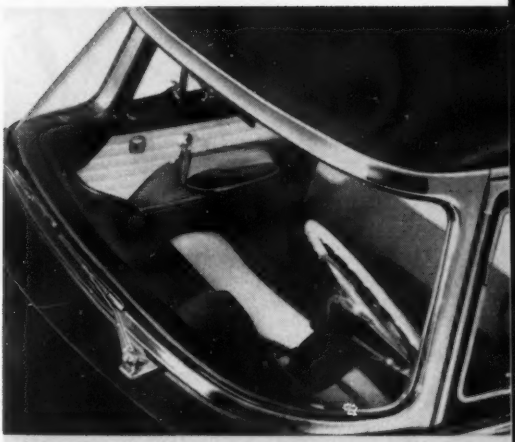
Sales Representatives in Principal Cities

'55 Dodge Uses Variety of Plated and Painted Metals to Improve Appearance

Three-tone paint combinations used to finish this 1955 Dodge Royal Lancer hardtop coupe contribute to its beauty. Finish is applied, after phosphatizing, by conventional priming and glazing process followed by two coats of baked synthetic enamel. Functional and attractive, chromium plating protects the steel bumper and grille. Attractive V-8 medallion on the rear quarter panel is gold plated zinc base die casting.

(Photos courtesy Chrysler Corp., Detroit, Mich.)

APPEARANCE and UTILITY



Windshield molding is polished stainless steel. Electric window control buttons are chromium plated brass.

Automatic transmission control lever knob is chromium plated aluminum die casting.

NEWS of the Industry

NEW PLANTS

Industry's largest capacity plant for the commercial application of chemical nickel plating has been built by **AMERICAN LOCOMOTIVE COMPANY** at Dunkirk, N. Y. The company's process, named Alcoplate, is an adaptation of the General American Transportation Corporation's Kanigen process. Included in the term Alcoplate are important pre-plating and post-plating operations established by Alco, as well as experimentation, laboratory testing and quality control procedures.

Alco officials have identified three principal advantages of the process: Prolonged service life of production equipment; Alcoplate can be applied to inexpensive basis metals and will provide excellent protective qualities; components plated by the new method guard against contamination of processed materials.

Alcoplate also is advantageous because it can be used to plate the most intricate surface with uniform thickness, its zero porosity assures freedom from corrosion of base metals, it has excellent adhesion characteristics, it applies an extremely hard coating of plate and it offers excellent corrosion resistance. The wear resistance of Alcoplate is particularly well adapted to those industries which use process and transmission equipment in their production cycles.

As the producer of large quantities of nickel plated equipment for the Atomic Energy Commission and various commercial installations, Alco is one of industry's most experienced manufacturers of nickel plated components. Against this background, the company began to investigate chemical nickel plating processes. As a result it obtained a Kanigen license, installed its production facilities and established the pre-plating and post-plating procedures so important to the process.

The Dunkirk production facilities are able to handle the Alcoplate process by two continuous-flow methods. The first is a closed cycle system used for internal coating and volume coating of similar-sized products, while the second is an immersion process for both internal and external coating and for plating product parts. Alco's equipment includes large cleaning vats, makeup, surge and regeneration tanks, as well as numerous pumps, heaters and evaporators. All are lined with glass and linked with glass piping since the plating solution will deposit nickel on all but glass surfaces. The chemical solution is green in color and makes a striking picture as it boils through the glass piping system.

Alco has built two modern laboratories to conduct chemical analysis, micro and macro analysis, and physical testing. These laboratories are equipped with heat treating facilities, modern machine tools for preparing specimens, and delicate instruments for conducting necessary research and quality control tests.

Construction of a plant in Bowling Green, Ky., to house the Drycleaning Division of **THE DETREX CORPORATION**, manufacturer of chemicals, industrial metal-cleaning machinery and drycleaning equipment, is now under way. The 100,000-square foot plant is scheduled to be completed by April, 1955.

The new building will produce all Detrex drycleaning machinery. Up to now,

Perspective of plant being constructed for the Detrex Corporation.

this production has been integrated with the manufacture of the company's metal-cleaning equipment in the main Detrex plant in Detroit.

Other Detrex subsidiary plants are located in Ashtabula, Ohio, and Tacoma, Washington.

CROWN CHEMICAL & ENGINEERING CO. of Los Angeles has constructed a new building for its San Francisco branch. The structure contains the office, distribution, and warehouse facilities of the company.

JOHN R. PATTENGER, who is a past president of the San Francisco branch of the A.E.S., is the district manager. He reports the addition to the Crown sales staff of **DAVID PATTERSON,** formerly a chemist with the Schlage Lock Company.

The main office of the company is located at 4722 Worth St., Los Angeles, where facilities are available for the manufacture of plating chemicals and supplies. The firm's rectifier division is located at 345 Kansas St., El Segundo, Cal., where the manufacture of selenium rectifiers is centered.

The **INTERNATIONAL RACK CO.** has been established to serve the Ohio Valley with Naraco engineered racks, fixtures, and accessories for plating and materials handling. International Rack, newest in the coast - to - coast Naraco family, was opened in November.

Other Naraco companies are located in Paterson, Flint, Chicago, and Los Angeles. They produce engineered handling systems; removable and replaceable work holders (which permit new tips or work holders to be screwed on when desired); stock "Reddy Racks" for anodizing or plating; and "Paraco 300 Brown Plastisol Coatings" which prevent damage, corrosion, and rejects.

Free literature on the International Rack Co. and/or Naraco's latest racking catalog is available by writing: International Rack Co., 3712 National Highway West, Springfield, Ohio.

Plant of International Rack Co. at Springfield, Ohio.

COMPANIES

NOX-RUST CHEMICAL CORP., Chicago, manufacturer of rust preventive products and automobile undercoating, has adopted a new name. Because of diversification of products, the firm chose the name **DAUBERT CHEMICAL COMPANY,** after its president George A. Daubert. The company was founded in 1935.

Daubert Chemical Company will continue to market Nox-Rust rust preventive compounds and Vapor Wrapper through its Nox-Rust Division. Fendix undercoating, sound deadeners, and adhesives will be marketed through their respective divisions. A separate division will handle the sale of Nox-Carbon, an automotive specialty product.

ENTHONE, INC., manufacturer of chemical products for metal finishing has announced a change in the name of its division formerly known as Conn. Metalcraft, Inc. The new name will be **COMCO, INC.** This corporation has been engaged in the design and manufacture of plating racks, fixtures, filters, plastic tanks, ventilating ducts and in the sale of general equipment for the electroplating industry. Comco, Inc., is located at 442 Elm St., New Haven, Conn.

Award of $1,000 in **INTERCHEMICAL CORPORATION** scholarships to two seniors and two juniors at **LEHIGH UNIVERSITY** has been announced by Dr. Wray H. Congdon, dean of students.

Scholarships of 250 dollars each for the current academic year will go to Robert B. Ring, Newark, N. J., engineering physics senior; Joachim Schuit, a native of Germany now residing in Bethlehem, chemistry senior; Daniel P. Cannon, Allentown, and Walter J. Messner, Washington, N. J., both juniors majoring in chemical engineering.

Interchemical Corporation, which has offices in New York City and several plants in New Jersey, last spring set up a program of college scholarships to aid science students in their junior and senior years. The firm produces printing inks, industrial finishes, textile colorants and other chemical coatings.

The scholarships are awarded by Lehigh's committee on scholarships and loans. Basis for the awards is financial need, scholarship ability, character and leadership potential.

The Interchemical Corporation is the 45th industrial firm to establish a scholarship at Lehigh University. Other firms are being contacted by the committee on business and industry of which William J. Priestley, vice president of Union Carbide and Carbon Corp., is chairman.

The **UNITED STATES HOFFMAN MACHINERY CORPORATION**, 105 Fourth Ave., New York, N. Y., has acquired the exclusive world-wide sales representation for all **HYGRADE ATLAS INC.**, products, according to an announcement by Revis L. Stephenson, vice president in charge of Hoffman's Industrial Equipment Division, and Anthony P. Bambara, president of Hygrade Atlas, Simpson, Pennsylvania. The new Hoffman enterprise will be known as the Hygrade Metal Finishing Division. The contract, which will further expand the U. S. Hoffman line of heavy machinery equipment, will take effect immediately.

With the consumation of this contract, the U. S. Hoffman Corporation is now in a position to offer a new line of products allied with, and complementary to, the equipment now manufactured through Hoffman's Industrial Equipment Division. Included in the new line are metal-cleaning, rust-proofing and paint-bonding equipment, as well as drying ovens, electrostatic painting equipment, paint spray booths and paint baking ovens.

GEORGE BENDA, INC., manufacturer of "Bendalin" bronze powders, marked its 130th year of continued operation and its 52nd year in this country in December, 1954.

Founded in 1824 at Nurenberg, Germany, the company was moved to the United States in 1902 and its plant and offices were established at their present location in Boonton, New Jersey.

CHEMSTEEL CONSTRUCTION COMPANY, INC.
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of processing & storage tanks & flooring in
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Low head room – high lift – automatic load and unload and plenty of other "automation concept" features mark the Stevens *Stevadoer*, the newest addition to the complete Stevens line of Automatic Plating and Processing Machines. *Frederic B. Stevens, Inc., Detroit 16, Michigan.*

Representatives of **W. CANNING & CO. LTD.** of London, England, recently made a tour of several American industrial centers inspecting polishing and buffing methods as well as cleaning and plating methods in use in the various plants. The visitors, **EDWARD L. MASEK, B. TROMANS** and **J. H. LOVATT,** attended the National Metal Congress in Chicago and visited plating and finishing plants in Chicago, Detroit, Cincinnati and other centers for this type of activity.

They report that they enjoyed a very pleasant reception at all the plants visited, and that they were particularly impressed with the variety of cleaning methods and the emphasis placed on cleaning prior to electroplating. The visitors were also impressed with the methods employed to clean zinc base die castings prior to plating. The methods used in the U. S. differ somewhat from those currently practiced in England.

Ninety-one technical service representatives from the eastern and Canadian divisions of **OAKITE PRODUCTS, INC.,** gathered at New York's Statler Hotel to share industrial cleaning experiences and to hear company chemists describe the properties of materials recently introduced.

Informal discussions were held in which the representatives reported on the problems they encountered in plants, and the ways in which they solve them —using an alkaline rust remover, for instance, to clean rubber molds; using a material designed for bottling plant conveyor chain lubrication for forming operations in metal plants. Savings made possible by the use of Oakite-engineered cleaning equipment were discussed—one representative reporting the use of an Oakite Hot Spray Unit for flowing paint stripping solution over trucks; another the advantages of cleaning buses and trucks with a unit which produces a heavy detergent foam; a third the adaption of steam guns to strip rejected pieces as they move along on a conveyor.

One hundred and twenty-five representatives from the company's other divisions took part in similar conferences in St. Louis and Los Angeles.

Purchase of **VERSENES INCORPORATED,** of Framingham, Mass., has been announced by Dr. Leland I. Doan, president of **THE DOW CHEMICAL COMPANY.**

In announcing the purchase, Dr. Doan said that Versenes Inc., has been engaged in manufacturing chelating agents, which have the ability to selectively inactivate or combine with various metal ions in solution.

Dr. F. C. Bersworth, president of Versenes Incorporated, will become a Dow research consultant, and Frank Kottek, Versenes treasurer and general manager, will continue as production manager at Framingham where manufacturing operations will be maintained.

THE CARBORUNDUM COMPANY has completed two new warehouse and office buildings in California, and has reorganized sales, engineering and other

Oakite Technical Sales Conference

services in the West into what is now designated the Pacific District, which includes the area west of the Rockies. **JOHN G. FRITZINGER,** formerly a sales executive in Niagara Falls, New York, has been named manager of the district, according to an announcement by General Clinton F. Robinson, president of the company.

The Pacific District organization will bring together the product sa'es and engineering services of all divisions of The Carborundum Company.

The new warehouse and office buildings are located near Los Angeles and San Francisco. The Los Angeles structure, located at 2626 South Malt Ave., provides 13,000 square feet of floor space for warehouse functions and 2,000 square feet for office operations.

The other building erected at Alviso Rd. and Evelyn Ave., Mountain View, Calif. (near San Francisco) provides 18,000 square feet of floor space for warehouse use, 2,000 square feet for lathe room and service area, and 1,600 square feet for office functions.

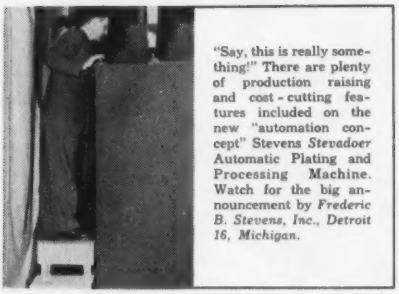
Mr. Fritzinger, Pacific District manager, has established headquarters in the Los Angeles office. **W. B. SUMMERS,** sales manager for coated products, and **W. H. HOMEYER,** sales manager, Merchandising, also will have headquarters there, and **WILFRED ROBSON** has been designated office manager for the Los Angeles office. **F. J. BLAKE,** sales manager for Bonded Products & Grain, will be located at the Mountain View office and **JAMES MEEHAN** has been appointed office manager there.

To expand its extensive line of metal processing chemicals, the **PENNSYLVANIA SALT MANUFACTURING CO.** has acquired all patents and assets of the **GILRON PRODUCTS COMPANY** of Cleveland, Ohio, president George B. Beitzel has announced.

Featuring Drawcote, a light drawing compound widely used in the automotive, appliance and munitions industries, the products of Gilron will provide logical additions to Pennsalt's Foscoat process line, which was designed for heavy fabrication. Also included are Gilron metal cleaners, which will supplement the present Pennsalt cleaner line.

ENTHONE, INC., New Haven, Conn., manufacturer of metal finishing and electroplating chemical products has announced the assignment of additional territory to the company's Chicago manufacturing distributor, **ARDCO, INC.** Through James P. Hendrickson, resident sales engineer, Ardco will service southern Illinois and eastern Michigan from Mr. Hendrickson's office at 3738 Washington Blvd., St. Louis, Missouri.

All Enthone products will be available in this territory with shipments being made from Chicago. Enthone's service engineer, Robert Goodsell, will also be available when needed.


"Say, this is really something!" There are plenty of production raising and cost-cutting features included on the new "automation concept" Stevens *Stevadoer* Automatic Plating and Processing Machine. Watch for the big announcement by *Frederic B. Stevens, Inc., Detroit 16, Michigan.*

The formation of **BATES SOAP CORPORATION** has been announced by the president of the company, **HAROLD R. BATES.** Located at 1231 Seneca St., Buffalo 10, N. Y., the company produces coatings for spray booths, cleaning compounds, rustproofing compounds, cutting oils, and drawing compounds.

Mr. Bates was formerly manager of Hygrade Food Products, Harris Soap Division (formerly president of Harris Soap Co.). He developed many of the products which the new company is manufacturing and supplying to the finishing industry.

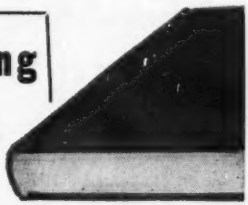
The formation of **HYDROMATIC METAL FINISHING, INC.**, a sales and service organization for distribution of Mechamatics, Crown and Rampe tumbling equipment and supplies and special barrel finishing compounds has been announced by the company's general manager, **G. Latshaw.** Located at 18931 St. Clair Ave., Cleveland, Ohio, the company will also furnish laboratory and engineering service.

Mr. Latshaw has been associated with several prominent manufacturers of metal finishing equipment.

Stockholders of the **I. P. THOMAS & SON COMPANY** of Camden, N. J., have approved a plan under which the **PENNSYLVANIA SALT MANUFACTURING COMPANY** acquires Thomas assets in exchange for 18,851 shares of Pennsalt common stock. This announcement was made by J. S. Coale, board chairman of the Thomas Company, who stated that his company will become an operating division of Pennsalt Chemicals on or before March 31, 1955.

A producer of commercial fertilizers, phosphoric and sulfuric acids and a promising water conditioning agent known as "Hy-Phos," the Thomas division will further diversify Pennsalt's industrial chemicals line and provide basic materials required in the company's chemical specialties production. Present facilities include a well-equipped plant and central warehouse in Paulsboro, N. J., and distribution centers elsewhere in New Jersey, New York, Pennsylvania and Delaware.

Bringing you Modern developments in plating processes and methods



HERE are the basic theories and principles of electroplating—the practical methods and processes that are of invaluable use to everyone concerned with electroplating and electrotyping. The most efficient methods of making electrodeposits on more than 40 different metals, alloys, and plastics are summarized completely in this thoroughly revised and enlarged book.

Principles of
ELECTROPLATING & ELECTROFORMING

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Revised 3rd Edition
455 pages, 6 x 9
24 tables, illus.
$7.00.

Completely revised to make it a more practical working guide, this book summarizes and digests the best of modern practice in the field. It covers qualitative, quantitative analyses of solutions; pickling, dipping; electropolishing; electroforming, electrotyping; producing phonograph record matrices, and manufacturing tubes, etc. Metals are dealt with in the same order as in the periodic system of elements.

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PRODUCTS FINISHING, 431 Main Street, Cincinnati 2, Ohio

(Left to right) Ralph V. Esten, George W. Broomhead and Eugene A. Bedard.

Ralph Garafalo, president of **WIRETEX MFG. CO.** has announced the appointment of the **NOBLE EQUIPMENT CO.**, La Grange, Ohio, as agents for Ohio. The firm, headed by C. E. Noble, will serve all of Ohio, except the Cincinnati and Youngstown areas. The Noble Company employs four salesmen and represents the Despatch Oven line as well as the Wiretex line of wire baskets.

NEW POSITIONS

RALPH V. ESTEN and **EUGENE A. BEDARD** have joined the Industrial Department of Wyandotte Chemicals Corporation, Mr. Esten working in the company's Los Angeles office, and Mr. Bedard in San Francisco.

Mr. Esten secured a degree in chemistry from Ohio Wesleyan University. Following 3 years with Harshaw Chemical Co., Mr. Esten assisted with the construction, operation and maintenance of a large electroplating job shop in Los Angeles.

Mr. Bedard secured his advanced technical education in New England. For the past 16 years, Mr. Bedard has worked in the San Francisco area. He has been production superintendent in a manufacturing plant, technical consultant to industrial sales groups and has sold and serviced industrial chemicals.

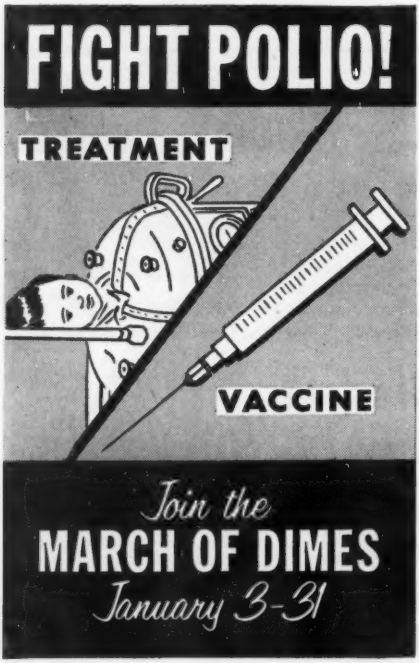
GEORGE W. BROOMHEAD has been transferred from Wyandotte Chemicals' Dallas territory to the Los Angeles sales and service staff. Mr. Broomhead has many years of experience with industrial chemicals.

The Andrew Brown Company has announced the appointment of resident salesmen in three different cities served by its Irving, Texas plant.

GEORGE S. HOWARD, with twenty-seven years' experience with a major industrial paint manufacturer, recently specializing in aircraft finishes, will be located in Tulsa, Oklahoma, at 234 South Indianapolis St.

Elmer Hall, for the past six years associated with a major aircraft manufacturer, will serve the Wichita, Kansas, area in the same capacity. His address will be 387 North Woodlawn, Wichita, Kansas.

ROY SIGSBEY, a veteran of both sales and production experience with the Andrew Brown Company, will be stationed in Houston, Texas, at 5631 S. Park Blvd.



The Andrew Brown Company manufactures Brolite aircraft, marine, industrial, and automotive finishes.

Newell P. Beckwith

NEWELL P. BECKWITH, vice president and technical director of Rinshed-Mason Co., Detroit, Mich., and also vice president and general manager of Rinshed-Mason Co. of Canada, Ltd., has been elected president of the Federation of Paint and Varnish Production Clubs, a cooperative, nonprofit technical association composed of some 3500 technologists and production personnel employed in the manufacture of protective decorative coatings.

A native of Omaha, Neb., he was graduated from North Dakota Agricultural College in 1936 with the degree of B.S. in organic chemistry. After a year of postgraduate study on paint technology, also at NDAC, he began his career in the paint industry with the Chrysler Corp. as a paint technician.

In 1940 he became associated with Rinshed-Mason Co. and six years later was named chief of automotive research. He was appointed director of research in 1949 and vice president and technical director in 1952. Earlier this year he was elevated to the position of vice president and general manager of the company's Canadian plant in Windsor, Ont.

Mr. Beckwith is a member of the Detroit Paint and Varnish Production Club and has been an active participant in Federation activities for many years. In the past he has served as chairman of several committees, as well as having been treasurer for three years.

JAMES B. MOREY has been appointed in charge of the Cincinnati, Ohio, Technical Field Section of the Development and Research Division of The International Nickel Company, Inc., and **WILLIAM S. MOUNCE** has joined the division in New York City as a member of the Constructional Alloy Steel Section.

Mr. Morey succeeds **C. T. HALLER, JR.,** who was recently appointed in charge of the company's Pittsburgh, Pennsylvania, Technical Field Section.

Mr. Mounce joined International Nickel in 1945 as a member of the New England Technical Field Section at Hartford, Connecticut.

Edwin Vereeke

Promotion of **EDWIN VEREEKE** to the position of executive vice president of Heil Process Equipment Corporation has been announced by that company. Mr. Vereeke previously had been vice president in charge of sales for Heil, a Cleveland manufacturer of chemical-resistant tanks and linings, acid heaters, lead anodes, plastic ventilating systems and related products.

Mr. Vereeke has been with Heil since 1946. He is a graduate of Ohio Wesleyan University, and is a member of the National Association of Corrosion Engineers.

HONORS

W. W. COTHRAN, of Indianapolis, has been awarded the 1954 D. C. Ball Distinguished Service Award from **JOHN A. CARTER,** president of Oakite Products, Inc., manufacturer of industrial

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W. W. Cothran (left) receives 1954 D. C. Ball Distinguished Service Award from John A. Carter, president of Oakite Products, Inc.

cleaning and related materials. Mr. Cothran has represented Oakite in Indianapolis for the past 21 years.

The award, named in honor of the founder of the firm, is given annually to the Oakite technical service representative who has rendered exceptional service to industry. The selection is made from the company's 225-man field organization in the United States and Canada. Mr. Cothran received the plaque at the company's Midwestern technical sales conference recently held in St. Louis.

JOHN A. BAUER, vice president and member of the board of directors of Hanson-Van Winkle-Munning Co., Matawan, N. J., was honored on the occasion of his 25th anniversary with the company.

At a dinner on Nov. 30 at the Princeton Club in New York, he was presented with a silver cigarette box inscribed with the signatures of the members of the board of directors. The presentation was made by Louis M. Hague, president of H-VW-M, and the dinner was attended by members of the board.

Mr. Bauer, a resident of Matawan, came to H-VW-M as advertising manager and has since held various executive sales positions. He was appointed vice president in 1948.

Hanson-Van Winkle-Munning Co., a leading manufacturer of electroplating and polishing equipment and supplies, was founded in 1820. Its main offices and plant are in Matawan. Other offices are located in leading cities across the country. The company also has a plant in Grand Rapids, Mich.

John A. Bauer, vice president of Hanson-Van Winkle-Munning, receives a presentation from Louis M. Hague, president of H-VW-M, at a dinner in New York honoring Mr. Bauer on his 25th anniversary with the firm. Taking part in the proceedings are Dr. Rufus E. Zimmerman, a director (left) and Van Winkle Todd, chairman of the board of directors (right).

IRVIN B. THOMAS, instructor in the **DEVILBISS COMPANY** spray painting school, Toledo, Ohio, has been named to a committee for the formulation of a questionnaire which will be a forerunner of recognizing industrial schools for college credit.

At a recent meeting of industry representatives at Wayne University, Detroit, Mich., A. D. Althouse of the Detroit Public Schools pointed out that a 40-hour week in an industry school may be equivalent to one university credit hour.

The DeVilbiss spray painting school, which has been operating for more than 25 years, has trained thousands in the correct usage, care of handling of spray painting equipment and the correct technique of spray painting.

In the past, school sessions have been devoted to furthering the training of vocational teachers. This is the first attempt to provide college credit for teachers completing the course.

Underlying the movement is the determination by educators and industrialists to up-grade the training of mechanics in vocational schools by awarding college credits to vocational teachers who participate in the program. The present plan is to have the teachers attend regular sessions of the school so they can obtain first-hand information about the problems encountered in the field by the man on the job.

GENE RIOTTE, New York district sales manager of United Chromium, was recently honored with a luncheon at the Chemists' Club on completion of twenty years' service with the company. He was presented with a movie projector to mark the occasion.

Mr. Riotte received his degree from the Sheffield School of Engineering at Yale University in 1929. He gave five years to the non-ferrous metals and railroad equipment industries before turning his engineering skills to the metal finishing field.

Gene Riotte (left) New York district sales manager, and Richard O. Loengard, president, United Chromium, Inc.

MEETINGS

According to the list of exhibitors who have already signed up for the **1955 INDUSTRIAL FINISHING EXPOSITION,** the show will be larger than the 1952 Exposition. The show is scheduled to open at the Cleveland Public Auditorium on June 20, 1955.

The Convention Committee has been working on plans for the show since August, 1953 and it appears that the advance planning is paying off in building a larger and better show.

The Industrial Finishing Exposition serves a need in the industry in the fact that it provides a good medium for the mutual exchange of ideas between equipment builders and equipment users. The 1955 Exposition will be the first show held in three years.

The program at the Convention and the Exposition itself will be of interest to both organic and inorganic industrial finishers. Because of the many new papers to be presented, and in view of the important advancements to be exhibited, an equipment user may pick up an idea that can be beneficial in improving operations at his plant.

At the present time, there are 95 exhibitors who will be represented at the 1955 Industrial Finishing Exposition. Others are also expected to enter exhibits during the next few months.

THE NATIONAL FEDERATION OF METAL FINISHERS has announced that its **THIRD MANAGEMENT SEMINAR** will be held on Saturday, January 29, 1955, at the Conrad Hilton Hotel, Chicago. The Seminar will be held in conjunction with the Annual Educational Sessions of the Chicago Branch, American Electroplaters' Society.

The program for the event will include sessions on topics of interest to the management of job shops and finishing departments. These include talks on "Production Control in Metal Finishing" by Edward L. Barnett, Binks Mfg. Co., Chicago; "The American Economic System," by Charles M. Hanna, The Everingham Co., Chicago; and "How to be a Profit Manager," by Kenneth J. Eaton, Associated Business Consultants, Chicago.

J. Robert Greenwell

Federation President J. Robert Greenwell, Reliable Plating Corp., Chicago, has announced that the Seminar again is being sponsored by the Federation as a service to the industry, and no charges are being made to those attending. Invitations to the event will be sent to owners and operators of job-shop finishing firms throughout the country, and to the managers of finishing departments of manufacturing firms. Attendance is limited to these groups.

On the evening preceding the Seminar, Friday, January 28, a trip has been arranged by the Chicago Electro-Platers Institute for seminar attendees to visit the electroless plating operation of the Kanigen Division, General American Transportation Corp., East Chicago, Ind.

The **43RD ANNUAL EDUCATIONAL SESSION AND BANQUET** of the **CHICAGO BRANCH** of the **AMERICAN ELECTROPLATERS' SOCIETY** will be held January 29th in the Conrad Hilton Hotel, Chicago. Dr. R. E. Harr, branch librarian, has arranged an educational program which should have an appeal to finishers with a wide variety of interests.

C. F. Nixon

Ezra A. Blount

The educational program beginning at 2:00 P.M. is as follows:

1. "Japan Through the Eyes of Ezra A. Blount, Editor of PRODUCTS FINISHING." A short color movie showing various activities of Japanese people including some Japanese electroplaters.
2. "Applications of Phosphates for Metal Cleaning Purposes," by W. B. Coleman, Supervisor, Applications Research, Victor Chemical Works, Chicago, Illinois.
3. "A Survey of Application Methods for Organic Finishing," by Ezra A. Blount, Editor of PRODUCTS FINISHING Magazine, Cincinnati, Ohio.
4. "Electroplating for Out-of-Door Durability," by C. F. Nixon, Head, Electrochemical Division, General Motors Research Corporation, Detroit, Michigan.

Following the educational program, the annual banquet will be held at 7:00 P.M. The committee has arranged the usual excellent dinner and entertainment program which members of the Chicago branch have learned to expect at this outstanding Annual Meeting.

Information concerning reservations and tickets for the banquet may be obtained from Paul Glab, 882 N. Paulina Street, Chicago 22, Illinois.

THE ELECTROCHEMICAL SOCIETY, an international professional association with representatives in England, France, India, Japan, Canada and Sweden as well as the United States, has announced the selection of Cincinnati for its **1955 ANNUAL CONVENTION.**

This information was disclosed at a meeting of local members of the society,

Dr. R. O. McDuffie

including Cincinnati industries interested in Electric Insulation, Electronics, Electrothermics, Theoretical Electrochemistry and Electrometallurgy, including Corrosion and Electrolysis.

DR. ROY O. McDUFFIE, Professor of Metallurgical Engineering, University of Cincinnati, general chairman of the convention, has appointed local committees to arrange for the meetings, which will be held May 1-5, 1955, at the Sheraton-Gibson Hotel. The committees are as follows:

Entertainment:
Carl Taglauer, Harshaw Chemical Company, Chairman; William J. Ehlen, Consulting Engineer; Robert D. Miller, Electric Autolite Company.

Meeting Arrangements:
Robert Price, University of Cincinnati, Chairman; Joseph Sausville, University of Cincinnati.

Registration and Hotels:
Ezra A. Blount, Products Finishing Magazine, Chairman; John W. Magly, Consulting Engineer; Joseph H. Creevy, Newport Steel Company.

Plant Trips:
Richard Roelfes, Emery Industries, Chairman.

Finance:
L. M. Lederer, Inner Tank Lining Company, Chairman.

Publicity:
William J. Schreiner, Cincinnati Gas & Electric Co., Chairman.

Ladies Entertainment:
Mrs. William J. Schreiner, Chairman; Mrs. Roy O. McDuffie; Mrs. Milton J. Pfeiffer; Mrs. Carl Taglauer; Mrs. William J. Ehlen; Mrs. Robert D. Miller; Mrs. Robert Price; Mrs. Joseph Sausville; Mrs. Ezra A. Blount; Mrs. Joseph H. Creevy; Mrs. Richard Rolfes; Mrs. L. M. Lederer.

SOCIETIES

A discussion on "Novelty Finishes" was held at a recent meeting sponsored by the **INDUSTRIAL MANAGEMENT COUNCIL OF ROCHESTER.**

Principal speaker was **B. F. AMES,** general sales manager of Maas & Waldstein Co. Mr. Ames reviewed briefly the history of organic finishes, compared some of the earlier types of coatings with those of the present day, and discussed the problems and limitations of each from the viewpoint of modern research and development.

Because of current interest in multicolored, textured enamels, Mr. Ames reserved a major portion of the discussion for a description of Plextone A demonstration showed how a mixture of black and white enamels produced not the expected shade of gray, but an interlacing network of the original colors. Mr. Ames explained how new formulations permit any combination of two or three colors to remain separate without merging or blending in the liquid state. Plextone's multicolored "spatter-dash" effect is produced when the paint is sprayed with ordinary spray equipment, without spray dust during application

After the painting demonstration, previously sprayed panels were subjected to durability tests. It was shown how stains can be removed from the textured surface and how stubborn spots may be scoured or even sandpapered without marring the surface.

On Thursday, December 16, the **CINCINNATI BRANCH, A.E.S.,** held a special meeting honoring the past presidents of the branch. The occasion was also designated as Ladies' Night, and, as a result, over seventy members and wives turned out for the party.

After an excellent dinner, served in the new addition to the Engineering Society Headquarters, the members and guests were entertained by Ollie James, chief editorial writer for the Cincinnati Enquirer and Cincinnati humorist.

Following this presentation, Branch President William D. Gordon, of MacDermid, Inc., presented past president's pins to the former branch officers who were present for the occasion, and read letters from some of those now located in other cities and unable to be present.

Those who received pins (with year served as president indicated) were: Robert J. Knoepfler, 1934 to 1941; Harry Misner, 1942; William J. Ehlen, 1944; August Schwering, 1946; John F. Daymude, 1947; Ezra A. Blount, 1950; Robert D. Miller, 1951, 1952; Carl H. Truman, 1953.

As a final portion of the program of special interest to the ladies, Mrs. Ezra A. Blount showed color movies of her trip to Europe, accompanied by comments on the films and her experiences. She also assembled a display of products purchased in the countries visited.

TRAINING COURSES

J. L. BOGUS, technical service director of **JELCO FINISHING EQUIPMENT CORPORATION**, New York, N. Y., appeared as guest lecturer on December 2,

Fig. 1—A view of Cincinnati Branch members and ladies assembled for dinner on the combined Ladies' Night and Past Presidents' Night.

Fig. 2—Cincinnati Branch President William D. Gordon of MacDermid, Inc., presented A.E.S. past president's pins to a number of former presidents of the branch at a special meeting held on December 16 in the new addition to the Cincinnati Engineering Society building. Shown, left to right, (with the year served as president indicated in parentheses) are: William D. Gordon; August Schwering, Globe-Wernicke, Inc. (1946); Harry Misner, Shillito Co. (1942); William J. Ehlen, Electro-Lab. Processes, Inc. (1944); Carl H. Truman, Electric Auto-Lite Co. (1953); John F. Daymude, Crosley Div., Avco Mfg. Co. (1947); Robert D. Miller, Electric Auto-Lite Co. (1951, '52); Ezra A. Blount, PRODUCTS FINISHING Magazine (1950); Robert J. Knoepfler, manufacturers' representative (1934 to 1941).

(PRODUCTS FINISHING Staff Photos)

1954, before the joint classes in electroplating at the **BROOKLYN EVENING TECHNICAL HIGH SCHOOL.** The topic of his lecture was, "Nickel Baths." The functional phases of some of the common types were emphasized. The smooth characteristic plate of the sulfamate bath, Mr. Bogus indicated, will change to a hard plate if chlorides are present; the all-chloride nickel bath is used for worn shafts and machinery because of the hardness of the plate it produces; black nickel requires exact operating conditions for satisfactory results.

In the discussion of the Watt's bath, some of the characteristic troubles—pitting, peeling, streaking, throwing power and brittleness, their causes and remedies were reviewed. Such highlights as improper cleaning cycles, adequate rinsing, immersion plating effects, a four-hour carbon treatment, dummying, chelation and filtration were also presented.

A free **COURSE IN ELECTROPLATING** is being given at the **BROOKLYN TECHNICAL HIGH SCHOOL,** 29 Fort Greene Place, Brooklyn, New York.

Classroom discussion and laboratory exercises divide the time for the course. A general review of the elements of chemistry relating to plating operations and simple calculations required to understand solution preparations are covered in the class studies. The fundamentals of series and parallel electrical circuits are also reviewed. Such topics as pH, wetting agents, brighteners, buffer action, pitting agents and deionizing are introduced in the study of common tank solutions. Laboratory exercises provide for individual experiments in methods of analysis of copper, nickel and cyanide baths. Additional laboratory work includes Hull Cell studies, pH meter operation, anodizing, immersion plating, and thickness measurements.

Registration begins January 1, 1955. Classes meet on Tuesday and Thursday from 6:45 to 8:15 P.M., plus about six Fridays for the term. The term begins February 1, 1955 and ends June 30, 1955. Register with the instructor, Mr. Louis Serota in Room BW17 or Room 3E10.

NECROLOGY

HARRY E. HOWARD, 61, personnel manager of Norton Company, Worcester, Mass., died at his home December 16.

A Norton man for 40 years, Mr. Howard was one of three men in charge of the Norton plant in Hiroshima, Japan, from 1918 to 1925. On his return he was assigned to organic and ceramic control work. In 1941 he became assistant production manager of the Abrasive Division, and soon after became acting manager. In 1945 he was appointed assistant personnel manager and was appointed to his last position in 1947.

meetings OF INTEREST TO FINISHERS

Jan. 29. Annual Educational Session and Banquet, Chicago Branch, American Electroplaters' Society, Conrad Hilton Hotel, Chicago, Ill.

Jan. 31-Feb. 4. Committee week, American Society For Testing Materials, Cincinnati, Ohio.

Feb. 19. Annual Meeting, Dayton Branch, American Electroplaters' Society, Hotel Biltmore, Dayton, Ohio.

Feb. 19. Annual Meeting, Grand Rapids Branch, American Electroplaters' Society, Pantlind Hotel, Grand Rapids, Mich.

Mar. 7. Annual Meeting, Capitol District, A.E.S., Menands, New York.

Mar. 7-11. Eleventh Annual Conference and Exhibition of the National Association of Corrosion Engineers, Palmer House, Chicago, Ill.

Mar. 10. Annual Meeting, Waterbury Branch, American Electroplaters' Society, Hotel Elton, Waterbury, Conn.

Mar. 12. Annual Meeting, Baltimore-Washington Branch, American Electroplaters' Society, Washington, D. C.

Mar. 26. Annual Tri-State Regional Meeting, American Electroplaters' Society, Hotel Deshler-Hilton, Columbus, Ohio.

Mar. 29-Apr. 7. 127th Meeting, American Chemical Society, Cincinnati, Ohio.

June 20-23. 42nd Annual Convention and 4th Industrial Finishing Exposition, American Electroplaters' Society, Municipal Auditorium, Cleveland, Ohio.

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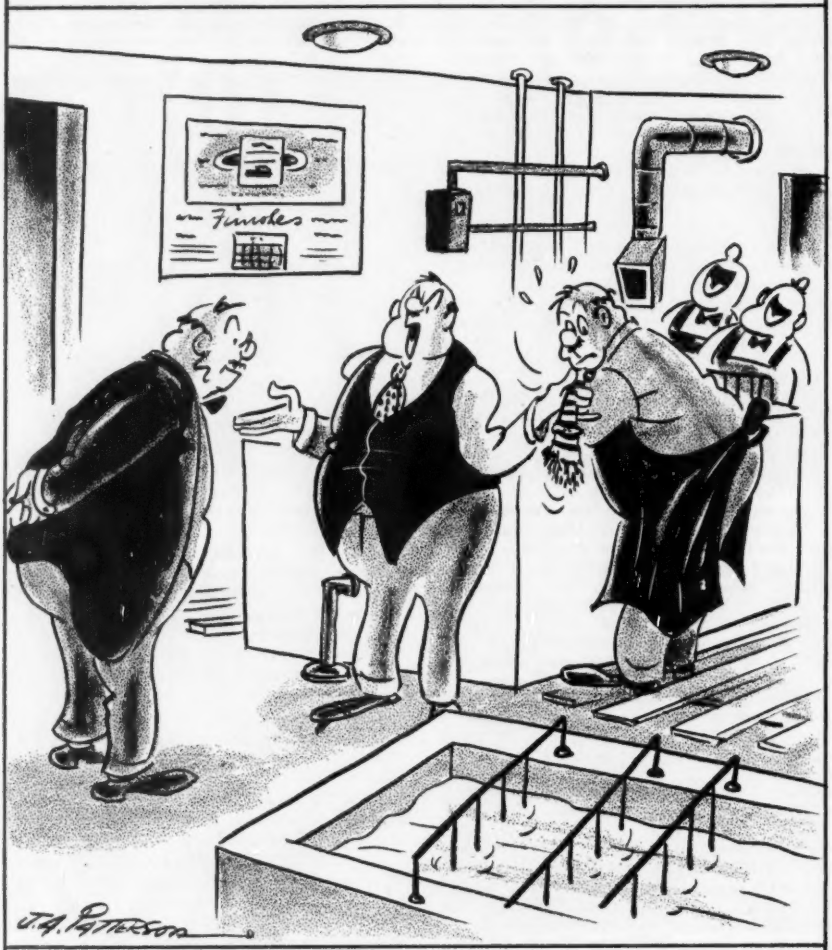

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48. Pressure Blast Equipment. Bulletin No. 4, entitled "Cleaning Prior to Electroplating with Pressure Blast," is available from the Cro-Plate Co., Inc., 747-6 Windsor St., Hartford 1, Conn. Advantages and typical applications of pressure blast cleaning are described, along with properties of the surface so cleaned.

49. Polishing and Buffing Heads. Described in a bulletin available from the Murray-Way Corporation, P.O. Box 180, Maple Rd., East, Birmingham, Mich., are the company's multi-position polishing and buffing heads. The Murray-Way Series 55 heads feature universal positioning and full contact with work.

50. Liquid Cleaner. A pamphlet citing the uses and advantages of Petroclean D-25, a liquid industrial cleaner, may be obtained from the Whistlclean Corporation, 404 Fourth Ave., New York 16, N. Y.

51. Plating Rectifier. The Kocour Model 5B Rectifier, operating from 115 volts, 60 cycle a.c. input and producing 5 amperes at 6/12 volts d.c., is described in Form YM31, available from Kocour Co., 4814 S. St. Louis Ave., Chicago 32, Illinois. Design, construction, and operating features of the rectifier are covered.

52. Spray Booth Compounds. A folder available from the Bates Soap Corp., 1231 Seneca St., Buffalo 10, N. Y., describes the products of the company. These include booth coating compounds, a protective coating for skin exposed to paint spray, and other products for the finishing industry. Descriptions of the products and price lists are included.

53. Filter Cloth. To help select the right filter cloth for any application in filtration or dust collection, engineering data has been assembled in a folder by Filtration Fabrics Division, Filtration Engineers, Inc., 155 Oraton Street, Newark 4, N. J. Feon Dynel, nylon, Orlon, polyethylene, Saran and other materials are covered. Of particular interest to process engineers are charts of chemical and temperature resistance.

54. Protection of Aluminum. A folder describing Alodine 1000, a protective treatment for aluminum, may be obtained from the American Chemical Paint Co., Ambler, Pa. Uses, characteristics, and typical application procedures are described. Photographs of aluminum parts with and without Alodizing, and exposed to weathering, are included.

55. Conversion Coatings. A bulletin describing conversion coatings for zinc and cadmium is available from Kosmos Electro-Finishing Research, Inc., 13 Valley St., Belleville, N. J. Ker-Chro-Mite No. 1 may be used in different concentrations as a brightener and/or as a method to increase corrosion resistance of zinc and cadmium plated coatings. The Ker-Chro-Mite GZ and GC processes are used to impart a colored protective finish on zinc and cadmium respectively. Full details of the processes are given.

56. Tumbling Chips. A folder giving specifications for Universal tumbling chips, used in polishing, honing, grinding and deburring, may be obtained from Universal Tumbling Supply Co., 14337 Mansfield, Detroit 27, Michigan.

57. Vibrating Degreaser. A bulletin available from Manufacturers Processing Co., 1354 Hilton Rd., Detroit 20, Mich., gives details of the Manpro MSS 100 Vibra Degreaser. Information is given on the cleaning cycle, the solvent recovery feature, construction, and dimensions.

58. Spray Mask Catalogs. Available from Sepanski and Associates, 900 Clancy, N. E., Grand Rapids, Mich., are catalog sheets explaining the design and listing construction features of the Sepanski Automatic Spray Mask Painting Machine and the Sepanski Automatic Spray Mask Washing Unit.

59. Polishing Equipment. Catalog No. 80, available from Hammond Machinery Builders, 1622 Douglas Ave., Kalamazoo, Mich., shows polishing, grinding, buffing, and dust collecting equipment manufactured by the company. Photographs of these machines are shown with accompanying descriptions of their uses and outstanding features.

60. Furnace and Oven Controls. Complete data on Brown Instruments and Honeywell Controls applicable to industrial furnace and oven equipment is available in catalog 54-1 published by Minneapolis-Honeywell Regulator Co., Industrial Division, Philadelphia 44, Pennsylvania. Specifications, recommended applications, and photographs of the various models are included.

USE CARD FOR FREE LITERATURE

61. Complete Finishing System. A brochure containing detailed plans and description of a complete finishing system installed at the Hamilton Manufacturing Co., Two Rivers, Wisconsin, may be obtained from the R. C. Mahon Co., Detroit 34, Michigan. Photographs are used to show the completed system in operation. This Mahon finishing installation is used to finish medical, surgical, and dental furniture and equipment as well as the Hamilton clothes dryer.

62. Roller Coating Process. A bulletin available from Gasway Corporation, 6463 North Ravenswood Ave., Chicago 26, Illinois, shows a typical case where the Gasway Rollacoating Process was helpful in finishing products with greater ease and better coverage. Advantages in economy, results and ease of handling are shown.

63. Timing Control for Plating Baths. A bulletin describing the Techni-Timer, an automatic timing control developed for use in rhodium, gold, and gold alloy plating solutions can be obtained from Technic, Inc., 39 Snow St., Providence, Rhode Island. Operational characteristics are shown and advantages cited.

64. pH Bulletin. Bulletin Q1304 on complete instrumentation for pH measurement and automatic control has been published by The Bristol Co., Waterbury 20, Conn. It contains drawings and photos of installations of pH recording and controlling instruments, as well as detailed drawings on different methods of installing the various instruments for pH measurement. Also described are accessories, recorders, and control systems.

65. Pump and Exchanger Selection Charts. A list of common plating and pickling solutions and the proper material to use for pumps and exchangers is being distributed by Carl Buck and Associates, Essex Fells, New Jersey.

Also included are simplified formulas and nomographs for the proper sizing of exchangers for heating and cooling solutions used in plating and pickling.

66. Air Tools. Bulletin No. 38-A, available from the Rotor Tool Co., 26300 Lakeland Blvd., Cleveland 23, Ohio, describes air tools, including sanders, grinders, and scalers. Complete specifications, including capacity, weight, R.P.M., and dimensions are included.

67. Tube Heaters and Oven Panels. Advantages of Corona-Merco Infra Red Pyrex Tube Heaters and Oven Panels are cited in a folder available from Corona Manufacturing Corp., 5210 San Fernando Road, P.O. Box 669, Glendale 3, Calif. Performance and economy are emphasized in describing these heaters used in drying and baking operations.

68. Barrel Plating Information. Ten modern methods of handling and cleaning small parts before barrel plating are contained in a new brochure, offered by Platers Research Corp., 59 East Fourth St., New York 3, N. Y.

The brochure describes formulas for bright nickel barrel plating solutions and describes how corrosion resistance may be improved without increasing plating time.

Included in the folder is a handy reference guide on thicknesses of deposits obtained under average plating conditions from nickel, cadmium, brass, silver, tin and zinc barrel solutions.

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69. Semi-Automatic Polishing Machines. A catalog being distributed by Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, (Ferndale) Mich., describes the line of semi-automatic polishing and buffing machines manufactured by Acme. Specifications, data, accessory equipment, and operational details are given for each model. Diagrams showing machines set up for finishing specific parts are also included.

70. Steam Traps. Bulletin No. 255A, explaining the operation of Sarco Thermodynamic Steam Traps, with complete specifications, capacities, and detailed diagrams is available from Sarco Co., Inc., Empire State Bldg., New York 1, N. Y. Sarco thermodynamic steam traps have only one moving part, a valve.

71. Oscillographs and Amplifiers. Information detailing recently developed models of oscillographs and amplifiers is provided in a new brochure offered by Brush Electronics Company, 3405 Perkins Avenue, Cleveland 14, Ohio. The literature gives basic details of the Brush four- and six-channel oscillograph in combination with universal and dual channel DC amplifiers. It also provides related information concerning the company's universal amplifier and dual channel direct coupled amplifier.

72. Lazo Plating Barrels. Hardwood Line Mfg. Co., 2022 N. California Ave., Chicago 47, Ill., has available a catalog illustrating and describing the Lucite plating barrel units manufactured by the firm. Features of each unit are covered.

73. Formed Wire Products. An eight-page brochure on Peerless Formed Wire Products and plant facilities for formed wire manufacturing shows operations from wire storage warehousing to final inspection and shipping. This brochure may be obtained by writing to C. O. Wiselogel, Peerless Wire Goods Company, Inc., Dept. P 312, 2702 Ferry Street, Lafayette, Indiana.

74. Ion Exchange. Graver Water Conditioning Co., 216 W. 14th Street, New York, N. Y., now has available Technical Reprint T-123 entitled "Applications of Ion Exchange to Plating Plant Problems." This is a reprint of a paper given at the recent Ninth Industrial Waste Conference at Purdue University.

This reprint discusses methods of treatment, the use of ion exchange in the plating room, relative advantages of batch and continuous treatment, and economic factors.

75. Flexible Shaft Machine. Franklin Balmar Corporation has issued catalog No. C-210 for the line of Strand Flexible Shaft Machines and accessories manufactured by the N. A. Strand Division. It presents data on the 3 basic types of Strand machines: single speed direct drive, multiple speed countershaft drive and the multiple speed gear-drive Strandflex line. Many useful tables relating to grinding wheels and operating speeds are also given.

Copies may be obtained from Franklin Balmar Corporation, N. A. Strand Division, Woodberry, Baltimore 11, Md.

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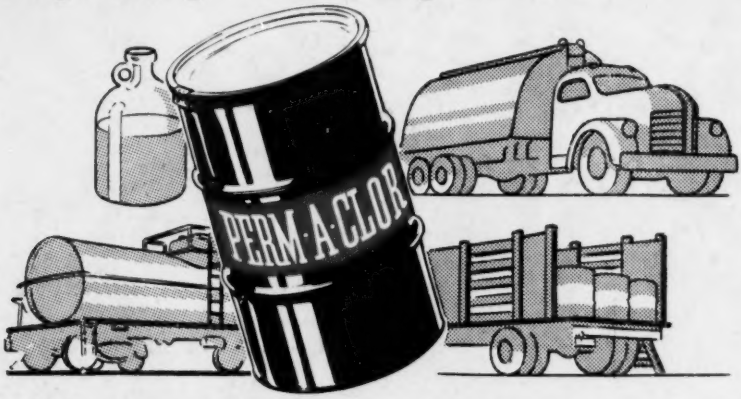

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